vorak's One-Act Play: The Great Merger Page 254

Northern California's Computer Magazine

Sept. 30, 1991

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MICROTIMES

P U B L I S H I N G

THE NEXT GENERATION

Digital Media editor Denise Caruso on communication tools, intellectual property, and why the "books" of the future may come from Microsoft. Or Nintendo. Or Pacific Bell.

"Microsoft is heavily invested in developing titles. There's a giant push at Apple to develop titles for the Mac. People who own large amounts of content are all looking at how they can segue their analog stuff, movies and music, into digital products that they can continue to resell."

"Considering the amount of money that gets invested in making a movie or in producing a record, somebody's going to have to come up with a way to protect intellectual property. I think this is going to be the first broad commercial use of cryptography."

"It's so early right now, and nobody really knows how customers are going to react to these things. Everybody's just sort of on their knees every night praying that this catches on."

Story starts on page 72

Online Financial Information From Moody's

"'With just a few keystrokes I can screen companies, find possible acquisitions, or scope out our competitors' latest moves,' says Al Lynch, director of planning and cquisitions for J.C. Penny." Story starts on page 28

Russian Hackers Help Thwart Coup

"Two computer networks connecting dozens of Soviet cities became overloaded with news of anti-coup efforts and first-person accounts. Researchers at an economic-reform movement in Kiev quickly organized an impromptu network to organize protests. Links through Finland and San Francisco became information conduits to the West." Story starts on page 105

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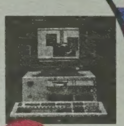

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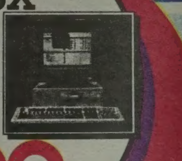

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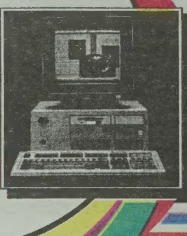

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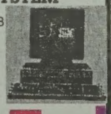

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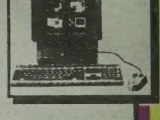

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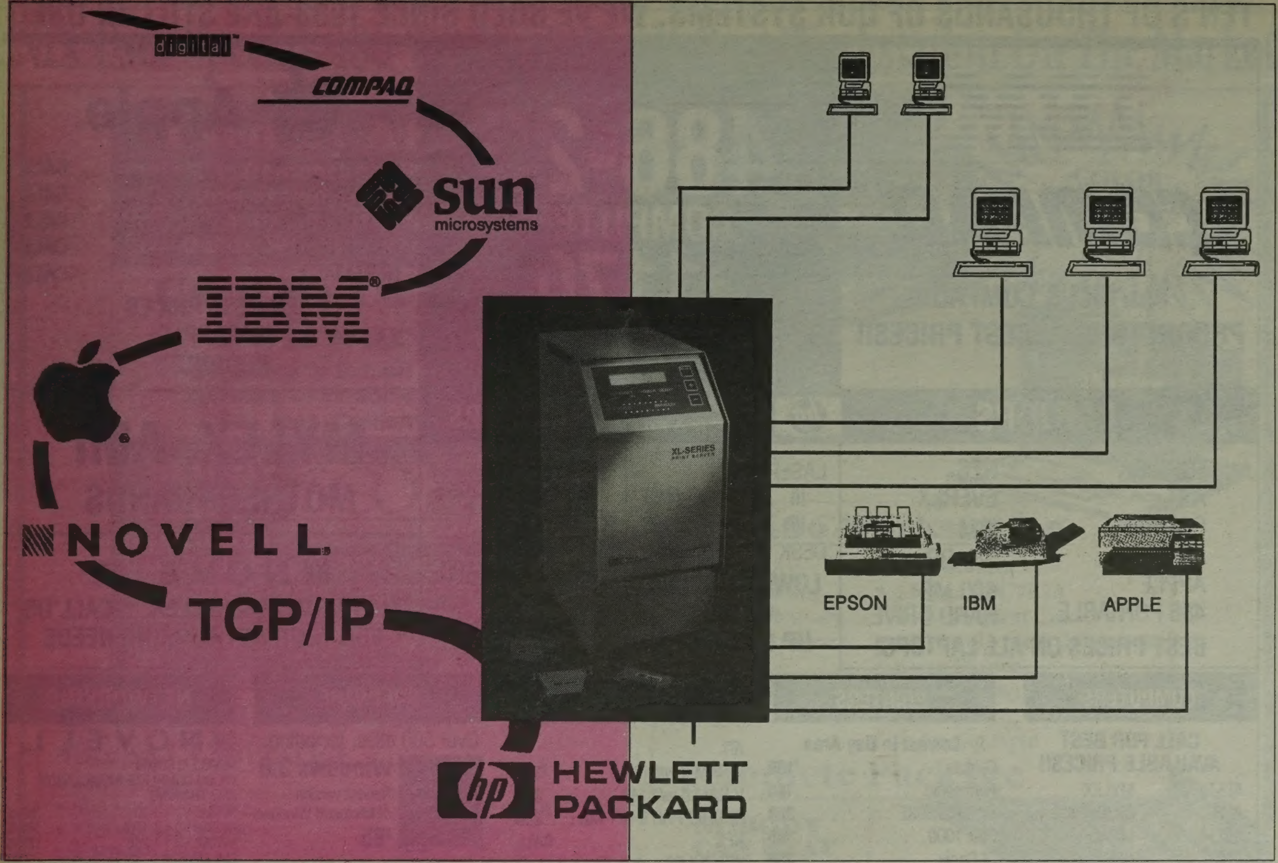

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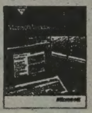

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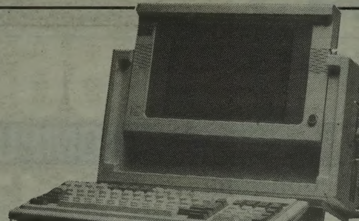

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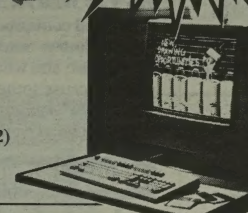

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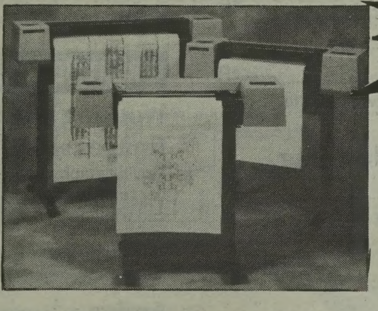

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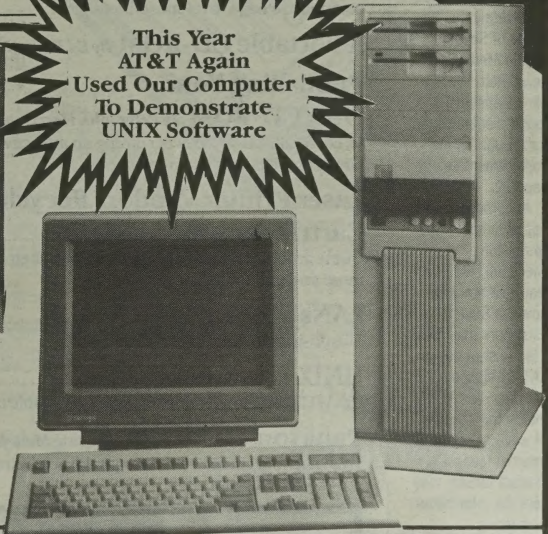

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A NOTE FROM THE EDITORS

It all started with desktop publishing and the LaserWriter, but it sure didn't stop there. As next month's annual Seybold Conference will show, the desktop computer now offers "publishing" capabilities unimaginable a few short years ago, from interactive TV-news laser discs to home videos running in your word processing document.

For some insights on the situation, we visited Denise Caruso. She's a veteran of *InfoWorld* and *Macintosh Today*, has written a weekly computer column opposite Dvorak for the San Francisco Examiner for the last five years, and is currently the editor of Seybold's *Digital Media* newsletter. We like her perspective and found plenty of food for thought in her comments. See page 72.

At somewhat the opposite end of the "publishing" spectrum, we also feature a story on how the Soviet coupsters may have tried to shut down CNN in Moscow, but they were no match for a bunch of wily hackers with Internet feeds and Fidonet BBSes, who kept the information flow going throughout the crisis. See page 105.

—ME

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Nobody knows exactly what the multimedia revolution is going to accomplish and when it's going to hit, but everybody knows it's going to cause some big changes in the publishing industry. *Digital Media* editor Denise Caruso offers some insights into life in an all-digital world.

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October 1–4, San Jose Convention Center
The show that spearheaded the DTP revolution has broadened its horizons to include a wide range of communications. If you want to find out how to use computers to get your message across, this is the show for you.

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Books, tapes, classes, and other options.

IQ ENGINEERING: FONT TECHNOLOGY LEADERS.

IQ Engineering was the first company to design and manufacture a multi-font cartridge for HP printers. From their first font cartridge--the Super Cartridge 1--to their latest product offerings, the Silicon Valley firm continues to lead the market in HP printer enhancements. Super Cartridges are now available for every HP LaserJet printer model and for the DeskJet Plus & 500.

IQ Engineering's Super Cartridge products combine quality, performance, and broad font selection. IQE's engineers "hand-tune" each font in order to produce the highest quality characters possible.

"The final test of a font product must be based on the quality of the printed output," said IQE president Michael Gardner. "This is our first goal at IQ Engineering."

This commitment to font quality has earned IQ Engineering accolades from numerous industry critics. Super Cartridge fonts have been awarded two "Best of" awards and a prestigious "Editor's Choice" from PC Magazine.

IQ Engineering's technical innovation continues. They are now marketing a new scalable font cartridge for HP LaserJet III printers. This new cartridge, the Super Cartridge 3/Professional Edition, offers LaserJet III users who are looking for PostScript, a better alternative than a cumbersome emulation cartridge.

The Super Cartridge 3 provides equivalents for the 35 typefaces made popular by PostScript printers--such as Palatino, Avant Garde and Dingbats--plus 15 other type styles. These IQ Engineering typefaces include a version of Garamond Old Style, decorative faces like the medieval English Blackletter and Modern Gothic (similar to Diet Pepsi's logo) and several fixed-width fonts for spreadsheets. And keeping with tradition, IQE's font design is excellent.

If you're looking for PostScript--look first at the Super Cartridge 3...It's a better option for the LaserJet III.

With the Super Cartridge 3 users can access over 40 symbol sets, more than any other scalable font cartridge, for foreign language, math and scientific uses.

Unlike PostScript cartridges for the LaserJet III, Super Cartridge 3 typefaces use HP's own PCL-5, so no conversion from PostScript to PCL language is needed when printing. This means that documents containing IQE's PostScript look-alike typefaces print up to 2.5 times faster than equivalent PostScript faces do on either LaserJet III with an emulator, or on a PostScript printer. This speed factor can be critical for printers on a network or printer sharing device where soft font downloading is unreliable and PostScript lengthens the wait in the print queue.

The Super Cartridge 3 uses the printer's own font-scaling and resolution enhancement feature for fast, 300 dpi printing. It also works well with the LaserJet III's original hardware configuration and can function with all of its resident fonts. Since no language conversion is necessary, the Super Cartridge 3 doesn't require any extra printer RAM or an expensive accelerator board to print.

IQ Engineering supplies HP-standard autofont files that let users install the Super Cartridge 3 automatically in WordPerfect, WordStar, Windows, Microsoft Word and others. Font drivers are provided for Lotus 1-2-3 and Ventura Publisher. Free screen fonts are available for Windows and Ventura.

The Super Cartridge 3, like all IQ Engineering products, comes with a 30-day money back guarantee, a lifetime warranty, and toll-free technical support.

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PC Magazine
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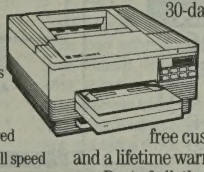

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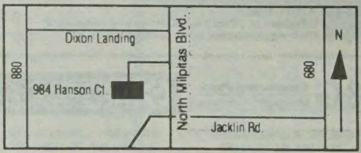

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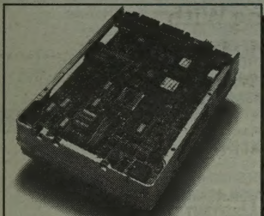

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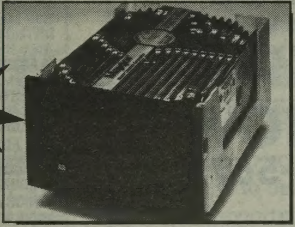

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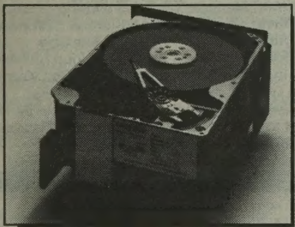

670MB 16.5ms

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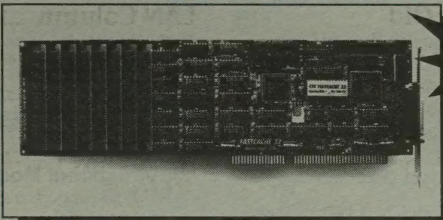

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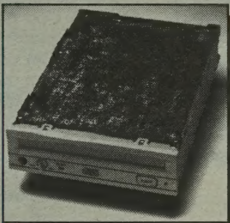

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Qty 1

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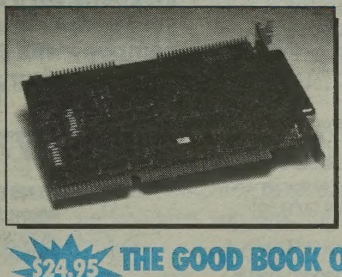
PERFORMANCE ON A BUDGET



$139
Qty 1

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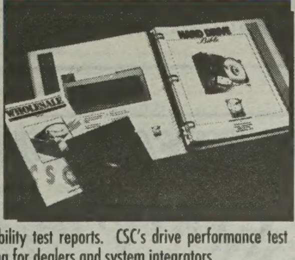

CSC's new edition Hard Drive Bible is the most technical reference on drives available. Included are installation instructions, jumper settings, drive parameter tables, and setup information on hundreds of hard, floppy, tape, and optical drives. Compatibility issues, installation hints, and tips on increasing system performance are included. Don't miss the benchmark chapter with performance and reliability test reports. CSC's drive performance test software is included. Essential reading for dealers and system integrators.

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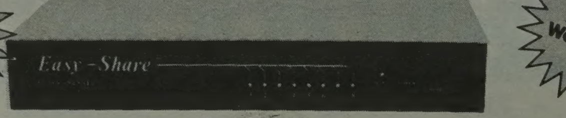

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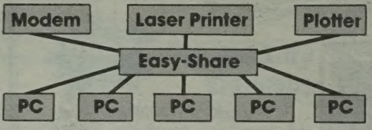

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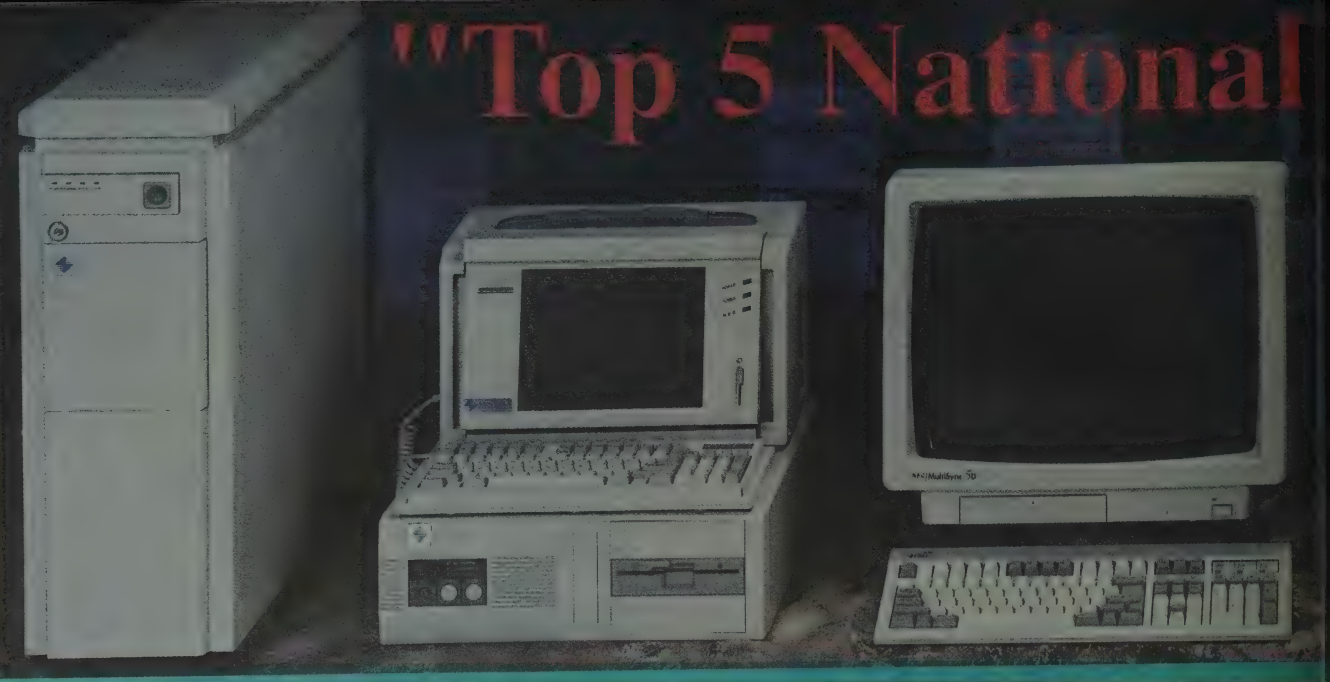

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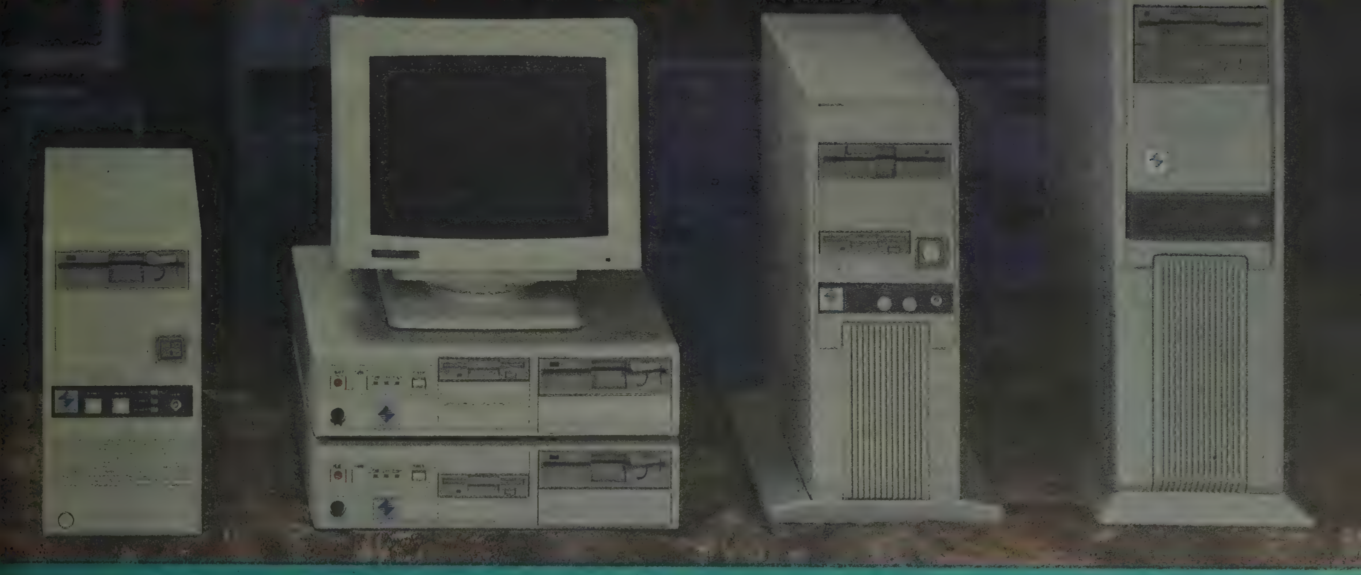

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CONTRIBUTORS

Contributors
Date: Wed, 21 Aug 91 19:23:49 pdt
From: adamg (Adam Gaffin)
To: microx
Subject: Re: compunets, soviet style

*What a day! Aside from the marvel everybody felt, it was *fun* again in our badly battered (40 percent fewer personnel than 3 years ago!) newsroom. We're a p.m., which meant that, for a change, the newsroom was really humming this morning as update after update came in, and for a few hours, anyway, I remembered how exciting a newsroom could be!*

Adam Gaffin writes about personal computers for the *Middlesex News* in Framingham, MA. In the course of doing his job, he spends a lot of time online, which is how we came to cross paths on the WELL last year. It's also how he connected with the Soviet computer scene. About the middle of July he suggested a story on computer networks in the USSR, little knowing how timely it would turn out to be.

For three days in August, along with the rest of the world, we watched CNN and wondered whether Soviet Computer Networks was going to turn out to be just another tragic might-have-been. As we go to press, the networks are thriving and amazing changes are happening faster than anyone can grasp their significance. Indeed, we're living in interesting times.

—ME

Other writers in this issue:
Lenny Bailes is a teacher and consultant in the Bay Area. He's been writing about personal computers for *MicroTimes* and other publications since 1987. His current project is a book on PC memory management. You can reach him via the Internet as *jroe@well.sf.ca.us.*

John C. Dvorak is the author of many books, articles, and columns on computer-related and other subjects. His radio program, "Dvorak On Computers," is heard on Sunday afternoons on KNBR in San Francisco.

Bennett Falk works at Sybase and takes a great interest in UNIX. Like fellow Contributing Editor Mike Markowitz, he's been writing for *MicroTimes* since our first issue in May 1984.

Norman Goldfarb, whose SIGGRAPH report is his first contribution to *MicroTimes*, is the CEO of StereoCAD, Inc. StereoCAD's new interactive visualization software, RealTime, is described in our Product Spotlight section this issue.

Peter John Harrison is a data communications and connectivity specialist based in San Francisco. He can be reached via the Internet as *peterh@well.sf.ca.us* and on CompuServe (74017,1716).

Paul Hoffman is an industry analyst who's been writing about microcomputer technology for ten years. He also writes books about popular microcomputer topics, including several on Microsoft Word.

Ed Kahn is our laptop computer maven. Based in Studio City, he's interested in portable computers from handhelds to luggables. He's also the co-author, with Charles Seiter, of *The Skeptical Consumer's Guide to Used Computers*, still one of the best introductions around to the vagaries of the computer industry from the user's perspective.

Woody Liswood has been writing about microcomputer hardware and software since 1980; his work has appeared in the *Whole Earth Software Catalog, Personal Computing, PC World*, and *Compute!* He has published a book about Human Resource Information Systems on microcomputers and is currently vice president of marketing for Software City.

Mike Markowitz has been writing about games for us since our first issue. His "Your First Computer" series resulted from user questions at the Southern California university computer lab, where he is often called upon to solve problems ranging from fried disks to disconnected printers to Internet access.

Contributing editor **Brock N. Meeks** is based in the Washington, DC area and writes on various computer-related subjects with a specialty in telecommunications. He's also been a war correspondent in Afghanistan for the *San Francisco Chronicle.*

Craig Menefee, who makes his first *MicroTimes* appearance with his article on the Panasonic BP270, is based in Clearlake, CA, and writes about a variety of personal computer products.

David Morgenstern is a member of BMUG and a veteran (not to mention irreverent) observer of the Macintosh culture.

Tom Schlegel is a San Francisco-based financial and computer systems consultant for small business and nonprofit organizations. His review of *Novell Netware 386: The Complete Reference* is his first *MicroTimes* article.

Among other things, contributing editor **Jim Warren** founded *InfoWorld* and the Computer Faire. More recently, he organized the First Conference on Computers, Freedom & Privacy.

Wayne A. Yacco is an editor, writer, and consultant specializing in business applications of microcomputers. He's a frequent contributor to many trade and business publications, and lives in Burbank.

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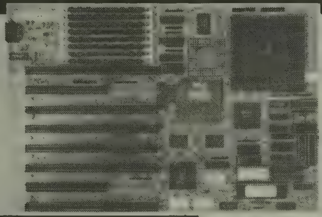

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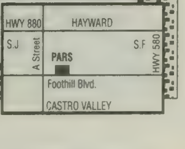

INDUSTRY INSIGHT

Screen Tariff Drives American Manufacturers Offshore

BY PAUL HOFFMAN

The International Trade Commission's recent ruling that Japanese active matrix liquid crystal screen manufacturers had to pay as much as a 63% tariff had its expected effect this month—the major supplier of these screens, Hosiden, announced that it will stop exporting them to the United States as requested by customers. Instead, it will continue to export the screens to other parts of the world; American manufacturers such as Apple and IBM will manufacture their portables in foreign plants. (Initial reports that Hosiden would stop exporting to the US altogether turned out to be a mistranslation by the Associated Press of a story in the Japanese business press.)

At the tariff hearing, all major companies who use the state-of-the-art screens warned that they would not be able to manufacture the portables in this country if a high tariff was levied, since it would make their systems significantly more expensive than imported systems. Given the recent anti-Japanese rulings by the ITC, Hosiden and the American manufacturers had been planning to move their production offshore if necessary to reduce the price of the portables. All companies warned the ITC that a high tariff would cost American jobs, since the computer vendors would have preferred to make the portables here and reduce shipping costs. Apple's widely expected new line of portable Macintoshes will probably be made in its plants in Singapore or Ireland, and similarly IBM and Compaq will move future assembly lines away from the US.

Paul Hoffman is an industry analyst who has been covering microcomputer technology for ten years. He can be reached on Internet (phoffman @well) and MCI Mail (264-3171). He also writes popular microcomputer books.

After the ruling, Hosiden told its customers that it would help them in any way possible to avoid the tariff if they wanted, including redirecting its shipments to other countries at the customer's request. The American companies that make similar displays were unable to meet the manufacturing requirements of the US portable vendors, leaving the latter with two choices: move manufacturing offshore or pay a huge price for screens.

The American LCD manufacturers insist that the American companies should buy screens from them, but sources at the portable vendors complained of very high prices, low reliability, and inflexibility on the part of the US manufacturers who brought the ITC complaint.

MACROMIND'S WINDOWS ACTION

Once a diehard Macintosh company, MacroMind has recently released many products that work with Microsoft Windows. Its most recent entry in the Windows market, Action!, takes a new look at the presentation market by allowing businesspeople to easily add action to currently static presentations.

Until now, most multimedia presentation packages were aimed at making animation easier. MacroMind realized that most animation looks pretty hokey in business presentations and most of what people wanted was moving text, coordinated sound, and an occasional special effect on a slide. Action! gives them all that for a reasonable price, $500.

Action! comes with many pre-made templates you can just drop words into. Instead of emphasizing animation (which is already well covered by products like MacroMind Director), Action! emphasizes coordination. It imports graphics and sounds from most of

US computer vendors would have preferred to make the portables here and reduce shipping costs. Apple's widely expected new line of portable Macintoshes will now probably be made in its plants in Singapore or Ireland, and IBM and Compaq will move future assembly lines away from the US.

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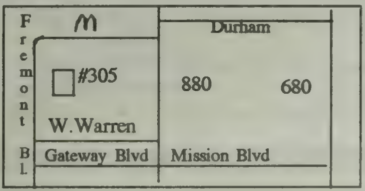

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the popular PC programs, so that existing static presentations can have action added with little fuss. Although some have called Action! a "low-end multimedia" program, it has almost all the capabilities of more expensive programs in the same category. It emphasizes the tools that people putting together presentations need most: good text handling, simple objects on the screen, importing existing pictures and spreadsheets, and good sound capabilities.

The trade press has started running more articles admitting that multimedia seems to be stalled, even though plenty of good software and hardware are available. The most important aspect of multimedia creation is the creator, and few people feel confident or have any reason to want to create multimedia presentations. One reason MacPaint started a graphics revolution is that most of us can't draw without significant help and lots of opportunities to change what we've drawn. Even with these tools, most people create fairly stilted drawings, heavy on rectangles and light on design or creativity.

Most multimedia tools have done little to get us interested in creating presentations. If we can't draw, how likely is it that we want to integrate our drawings with action and music?

MacroMind's Action! looks at multimedia from a different perspective than its competitors: It tries to look more like a slide preparation program that happens to do easy animation at the same time. As such, it will have a fairly well defined and growing market of executives and trainers who need new tools to keep people's attention. The other multimedia systems will have to wait for a more motivated audience that, in all likelihood, will never appear.

Until now, most multimedia presentation packages were aimed at making animation easier. MacroMind realized that most animation looks pretty hokey in business presentations, and what most people wanted was moving text, coordinated sound, and an occasional special effect on a slide.

ADOBE, APPLE AGREE ON FONTS

The often-warring factions in Apple and Adobe have settled their differences and will make both companies' print software available as part of the next version of System 7 for the Macintosh. This essentially means that Macintosh users will have the advantages of Apple's TrueType font technology, as well as Adobe's more established PostScript fonts. The agreement comes as both companies have suffered in the marketplace, largely because of intransigence.

Two years ago, Apple announced that it was breaking away from Adobe's PostScript fonts because of their high cost and Adobe's slow improvements on the technology. In addition, Microsoft agreed to team up with Apple to make the TrueType system an operating system standard (Microsoft is still expected to deliver TrueType in Windows v3.1). Apple's announcement shocked the industry, which had assumed that Adobe would always have an absolute command of the font market. Adobe responded first with anger, then relented and made concessions such as releasing the specifications for their highest-quality fonts, called Type 1 fonts.

However, many type users were not satisfied with Adobe's lock on controlling the appearance of PostScript fonts on the screen. The biggest advantage TrueType offered was that you could see exactly how your printout would look on the screen instead of having a jagged rendition of it. Adobe sold commercial packages called ATM (Adobe Type Manager) for the Macintosh and for Windows, but TrueType promised the same visual result and better integration for free.

The new agreement means that System 7 users will essentially have all the benefits of both TrueType and ATM as part of the operating system. People who use PostScript fonts won't have to buy Adobe's add-in package, and people who use TrueType most of the time can easily add PostScript fonts if they wish. Many people claim that TrueType

Continued on page 120

Technology News From Japan

(Excerpted from the weekly news digest of Japan Marketing Group, 400 Groveland Ave., Suite 312, Minneapolis, MN 55403, 612/871-7889. JMG covers products and events in the Japanese computer industry.)

➤Fujitsu has started manufacturing hard disk drives in Thailand. Its new $10 million plant will produce 45MB 3.5-inch drives. The move was aimed at lower production costs and greater geographical diversity.

➤Poqet, a subsidiary of Fujitsu, will market its pocket-sized PC to other vendors, including DEC. The new system has 640K of RAM and more flash memory than current models.

➤Compaq will release a Japan-specific computer next year from its Japanese subsidiary. Until then, Compaq will continue to sell its American-based systems to the corporate market.

➤Apple Japan announced that it revised its fiscal 1991 sales projection up by 50%. The new projections are based on the increase in interest since the low-cost systems were released last fall.

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technology is better and faster than PostScript, but undeniably there are many times more high-quality PostScript fonts available.

The agreement indicates Adobe's return to its roots. In the early days, Adobe made most of its money by licensing PostScript, not from retail products. When it tried to make money by selling retail products like ATM, users turned against the company. Adobe will still make significant money from other high-quality retail products like its fonts, Illustrator, and Photoshop, but will probably start to move much of its PostScript work away from retail and make more deals with manufacturers about including its technology in various operating systems.

LOTUS RELEASES 1-2-3 FOR WINDOWS, DISCOVERS REAL WORLD OF WINDOWS DEVELOPMENT

Clearly, Lotus would much rather write its software for plain old MS-DOS. Its previous attempts at the Macintosh market were dismal failures, since Lotus didn't follow the Macintosh paradigm very well. The most recent foray away from MS-DOS, 1-2-3 for Windows, shows that they are not completely comfortable with Windows either. Initial reviews of the program give it high marks for 1-2-3 compatibility (well, duh!) but only lukewarm ratings for speed and "Windowsness."

Although hundreds of new programs for Windows are being announced this year, the two most important will be 1-2-3 for Windows and WordPerfect for Windows. Both programs took much longer than expected; WordPerfect for Windows has just gone into beta test, so it may not even come out this year. These programs are the flagship products intended to compete with Microsoft's current lock on the Windows application market with the Excel spreadsheet and Word for Windows word processor.

The main claim to fame for 1-2-3 for Windows is that it's keystroke compatible with 1-2-3 v3.1 for MS-DOS. (Of course, if Lotus had not been so litigious, almost all spreadsheets would be compatible as well.) To achieve this compatibility in a Windows environment, 1-2-3 for Windows automatically pops up the "1-2-3 Classic" window whenever you press the "/" key. In a nostalgic touch, the 1-2-3 Classic window even shows characters as they would appear on a non-graphics PC screen. Another feature that 1-2-3 for Windows has and Excel lacks is an icon bar that lets you click on icons to perform standard tasks like saving files and formatting cells.

Lotus will not necessarily have an easy time in the market, however. In most tests, 1-2-3 for Windows was only half as fast as Excel, even when performing common tasks such as recalculating worksheets. Since the Windows interface makes most spreadsheets look fairly similar, the speed penalty is sure to hurt Lotus. In addition, many Windows-specific features do not feel "right" in 1-2-3 for Windows. For example, Lotus used some color methods when selecting cells that cause strange yellow bars to appear in some selections. Some very basic programming problems, like scroll boxes that work differently for horizontal and vertical scrolling and graphs that have labels floating in them, will also make customers wonder whether they should simply go to Excel and forgo the Lotus-specific features for a much faster and more stable product.

MicroTimes Index Once Again Outpaces National Averages

The Microtimes Stock Index soared to the fore in August, outpacing the national averages for the second straight month. The bottom line for our index of 34 stocks listed in the accompanying stock table: up 132.87 points to close at 3265.70—an advancement of more than 4.2% for the monthly trading session.

The Dow Jones Industrials, on the other hand, paled in comparison to high-tech stocks, gaining only 43.38 points, or 1.44%, to close at 3049.64 after hitting a record high of 3055 during the period.

Software concerns continued to trend higher last month, led by market bellwether Microsoft. Specifically, Microsoft ended the month up $12.50 (this after gaining $11.50 last month), or 12.5%, to finish at $85.75. The reasons: Microsoft benefited strongly from investor demand for over-the-counter stocks last month (it is the largest stock in the NASDAQ Composite index) and from renewed bullish comments regarding the company's earnings prospects. Microsoft was the largest dollar-gainer of the lot last month as a result.

Borland, another software giant, shrugged off possible concerns over its pending acquisition of Ashton-Tate and finished up $6.25 to close at $54.25. During the month, a group of stockholders announced that they were suing the company over its proposed merger with Ashton-Tate, prompting the Justice Department to request more data on the deal. Ashton-Tate closed the period at $16.38, up 5.7%.

Another software concern that had a big month was Symantec, which finished the month up $8.25 to close at $58.50. During the period, the company agreed to acquire private software concern, Zortech, for 400,000 Symantec shares.

Autodesk proved the exception to the rule, as this software concern lost $4.25, or 8.2%t, to close the month at $47.75. During the month, the company reported that its second-quarter earnings per share was $0.65. Although an improvement over the $0.59 a share figure from a year ago, the amount was less than analysts had been predicting and led many to revise downward their estimates for the company's profit potential for the year.

On the hardware side of the ledger, Digital Equipment fell victim to profit-taking and surrendered $5.88 a share, taking largest dollar-lost distinction along the way. The stock had run up sharply of late after the company announced a six-million-share stock repurchase program in mid-August.

EXCH	COMPANY	TICKER SYMBOL	CLOSING PRICE 08/02/91	CLOSING PRICE 08/29/91	NET CHANGE IN PERIOD	PERCENT CHANGE IN PERIOD	PRICE/ EARNINGS RATIO	ANNUAL DIVIDEND RATE	ANNUAL DIVIDEND YIELD	52 WEEK HIGH	52 WEEK LOW
					CPUs						
NYS	Advanced Micro Devices	AMD	11.50	12.13	0.63	5.43	-20	0.00	0.00	14.25	3.63
OTC	Intel	INTC	49.25	51.25	2.00	4.06	14	0.00	0.00	59.25	28.00
NYS	LSI Logic	LSI	7.75	7.25	-0.50	-6.45	-9	0.00	0.00	12.50	5.13
OTC	MIPS	MIPS	12.38	11.13	-1.25	-10.10	-371	0.00	0.00	20.88	7.25
NYS	Motorola	MOT	66.13	68.25	2.13	3.21	20	0.76	1.11	72.00	45.75

Continued

FLAWED INTEL 50MHZ 80486 CHIPS

A few flawed 50MHz 80486 chips were sent to Intel customers and possibly end-users in the past few months. Intel discovered that its testing program was failing to catch some faults, and stopped shipping the new, top-of-the-line chip for three weeks while it redesigned its testing procedures. At the same time, Intel asked its customers to stop shipping the systems until it could check the quality of the CPUs they contained. Intel then began retesting all of its parts in stock and shipping the chips to hardware manufacturers.

The failure was in the testing suite, not in the design of the chip. Most of the chips shipped by Intel work fine, but an unknown number do not. Since only a few thousand systems based on the 50MHz chip had been shipped, it is unlikely that many customers would receive bad chips.

The faulty chips would cause systems to freeze or reboot spontaneously, particularly at high heat. Intel promised to replace any defective parts at the OEM level; people owning defective systems should ask their dealers how to get a properly working CPU.

Intel's difficulty points out problems with newer, faster CPUs that will probably dog the industry for many years. When tested at higher speeds, processors exhibit more prob-

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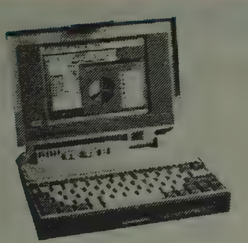

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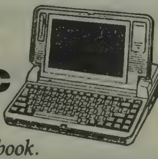

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286-16 40 MB HD	$469
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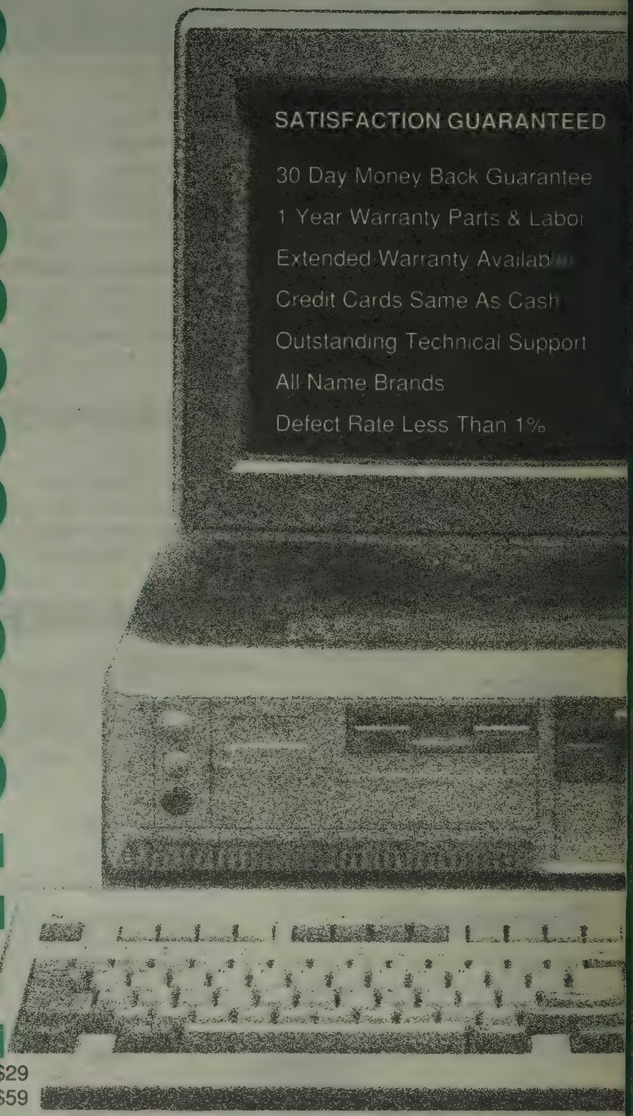

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lems than the same chip at lower speeds. Although most chip manufacturers can find these problem chips during normal testing, the new testing suites must be more rigorous in order to find the bad chips. This translates to higher production cost, longer waiting periods between the announcement and the availability of stable versions of the chip, and more customer concern as to the long-term reliability of each new generation of processor.

IS A RISC SYSTEM IN YOUR FUTURE?

The market for RISC-based computers is still quite small and, despite their promise of less expensive high-end computing, not growing rapidly. RISC systems have been in the news lately with the Apple-IBM agreement for new computers based on IBM's RISC processor, not to mention the ACE consortium, which will allow an open standard for systems based around the MIPS RISC line.

Sun Microsystems continues to deliver more RISC-based systems than any other manufacturer and probably will for quite some time. In July, Silicon Graphics announced a new low-cost RISC system that works well as an office computer and a graphics processor. The $10,000 Indigo system has most of the same capabilities as the NeXT system, but is much faster and has significantly better audio and video capabilities. Silicon Graphics included an impressive amount of hardware and software in the package, including three graphical user interfaces: Motif, Display PostScript, and SGI's own graphics language. The system comes with advanced three-dimensional graphics software so that it is easy to create and run graphics programs with admirable speed.

Intel and AMD are certainly giving most PC users good reasons not to move towards RISC systems by providing high-powered CPUs that run all existing MS-DOS software. Intel recently began shipping its 50MHz 80486 CPU; its 80586 CPU is expected within two years. AMD is widely rumored to be actively pursuing a similar path and will probably release its AM486 processors about a year from now. With high-speed CPUs like these, few people will feel the need to go to RISC-based computers unless they need a large amount more power (at a significantly higher price).

However, don't assume that there is no RISC in your future. Many laser printers now use RISC processors like the MIPS R3000 and AMD 29000 as their processing core. These RISC processors greatly speed printing of pictures and complex text, which are particularly important in desktop publishing and other graphics applications. Still, manufacturers of RISC processors report sales much slower than they had hoped for. MIPS Computer Systems, whose major business is systems based on their RISC CPUs and not the CPUs themselves, reported a significant loss last quarter and is laying off workers like many other high-tech companies. The other RISC manufacturers have other lines of chips to fall back on, but the RISC revolution has clearly not taken hold yet. ■

EXCH	COMPANY		TICKER SYMBOL	CLOSING PRICE 08/02/91	CLOSING PRICE 08/29/91	NET CHANGE IN PERIOD	PERCENT CHANGE IN PERIOD	PRICE/ EARNINGS RATIO	ANNUAL DIVIDEND RATE	ANNUAL DIVIDEND YIELD	52 WEEK HIGH	52 WEEK LOW
SOFTWARE												
OTC	Adobe		ADBE	54.50	51.00	-3.50	-6.42	24	0.32	0.63	63.00	17.00
OTC	Aldus		ALDC	39.25	38.25	-1.00	-2.55	21	0.00	0.00	59.88	21.00
OTC	Ashton-Tate		TATE	15.50	16.38	0.88	5.65	328	0.00	0.00	16.63	4.88
OTC	Autodesk		ACAD	52.00	47.75	-4.25	-8.17	20	0.48	1.01	62.25	32.00
OTC	Borland		BORL	48.00	54.25	6.25	13.02	27	0.00	0.00	64.25	15.13
OTC	Informix		IFMX	6.19	6.25	0.06	1.00	-5	0.00	0.00	7.75	2.63
OTC	Lotus	(H)	LOTS	34.00	39.75	5.75	16.91	-221	0.00	0.00	40.25	12.50
OTC	Microsoft	(H)	MSFT	73.25	85.75	12.50	17.06	35	0.00	0.00	85.75	35.75
OTC	Novell	(H)	NOVL	58.75	67.25	8.50	14.47	34	0.00	0.00	69.50	17.25
OTC	Oracle		ORCL	9.25	11.25	2.00	21.62	-125	0.00	0.00	12.13	4.88
OTC	Software Publishing		SPCO	14.75	19.75	5.00	33.90	23	0.00	0.00	35.25	12.00
OTC	Symantec	(H)	SYMC	50.25	58.50	8.25	16.42	56	0.00	0.00	58.50	17.75
HARDWARE												
OTC	Apple		AAPL	50.00	53.00	3.00	6.00	19	0.48	0.91	73.25	24.25
OTC	AST Research		ASTA	26.00	29.50	3.50	13.46	14	0.00	0.00	32.75	7.50
NYS	Commodore		CBU	14.50	11.00	-3.50	-24.14	6	0.00	0.00	21.63	4.50
NYS	Compaq		CPQ	36.38	35.75	-0.63	-1.72	8	0.00	0.00	74.25	29.88
NYS	Digital Equipment		DEC	69.50	63.63	-5.88	-8.45	-	0.00	0.00	83.00	45.50
OTC	Dell	(H)	DELL	30.13	33.63	3.50	11.62	20	0.00	0.00	35.63	8.25
NYS	Hewlett-Packard		HWP	56.50	53.75	-2.75	-4.87	16	0.48	0.89	56.63	24.88
NYS	IBM	(L)	IBM	100.38	95.50	-4.88	-4.86	13	4.84	5.07	139.75	94.00
NYS	Silicon Graphics		SGI	37.75	41.13	3.38	8.94	29	0.00	0.00	47.25	18.00
OTC	Sun Microsystems		SUNW	32.75	33.25	0.50	1.53	18	0.00	0.00	38.63	15.00
NYS	Xerox		XRX	55.25	58.25	3.00	5.43	10	3.00	5.15	60.13	29.00
NYS	Tandy	(L)	TAN	26.63	28.50	1.88	7.04	11	0.60	2.11	36.50	23.38
COMMUNICATIONS												
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OTC	MCI		MCIC	28.75	29.00	0.25	0.87	38	0.10	0.34	34.63	17.88
NYS	Northern Telecom	(H)	NT	38.38	40.25	1.88	4.89	21	0.32	0.80	40.75	22.13
NYS	Pacific Telesis		PAC	42.50	43.00	0.50	1.18	16	2.12	4.93	47.50	38.38

KEY: NYS=NEW YORK • ASE=AMERICAN • OTC=OVER THE COUNTER • (H)=NEW HIGH REACHED IN PERIOD • (L)=NEW LOW REACHED IN PERIOD • (s)=STOCK SPLIT

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	CLOSE 08/02/91	CLOSE 08/29/91	NET CHANGE IN MONTH	PERCENT CHANGE IN MONTH	DATE	MICRO TIMES	DOW JONES
					02/05/91	3586.83	2788.37
					03/05/91	3531.96	2972.52
					04/05/91	3298.59	2896.78
MICROTIMES STOCK INDEX	3132.83	3265.70	132.87	4.24	05/06/91	3209.84	2941.64
DOW JONES INDUSTRIAL AVERAGE	3006.26	3049.64	43.38	1.44	06/05/91	3178.90	3005.37
STANDARD & POOR'S 500 STOCK INDEX	387.18	396.47	9.29	2.40	07/05/91	2850.09	2932.47
N.Y.S.E. COMPOSITE	212.03	217.12	5.09	2.40	08/02/91	3132.83	3006.26
NASDAQ COMPOSITE	505.67	526.39	20.72	4.10	08/29/91	3265.70	3049.64

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Protecting Cars, Defending Freedom

Theft Prevention And Coup Avoidance

BY JIM WARREN

REALIZABLE FANTASIES

This column concerns what ain't, but could be—as soon as we do it.

FOOLPROOF AUTO THEFT PROTECTION

Ignition switches are not essential to vehicle operation, so hot-wiring that bypasses them facilitates easy theft. However, injecting fuel *is* essential, and on most modern vehicles, fuel mixture and injection are under control of an engine computer. Therefore:

Before the engine computer fuels the engine, have it check for a digital "key" that the driver/user must provide. (A switch, separate from the lock, would turn the engine on and off—just like older cars that had a starter button separate from the ignition lock.)

Further, the key need not be a physical key. If a "real" key is used at all, it could be a durable card with holes punched in it. It should *not* be a magnetic card—they're too prone to losing their minds.

At less cost than a traditional key system, a dashboard-mounted "lock" consisting of digital switches could replace or supplement a physical key. This would allow use of multiple keys. One would be for normal unlocking of the engine computer. Another—a "master key"—could allow the user to change the key codes, e.g. the "key" required for engine operation. Thus, the "car key" code could be "loaned" to someone—even by telephone or mail—and later changed by the owner.

Such protection can be equally applied to components such as cassette decks and radios. The radio could require an "authorization code" from the vehicle's engine computer before operating. The owner would store the code in the computer when the radio is installed. Authorization circuitry could easily be integrated into the radio's electronics.

Similarly, the engine computer could electronically interrogate the radio every few seconds to verify continuing presence of the radio's deeply buried ID code. It could then sound one of those (infuriating) alarms if the radio's suddenly missing, or maybe radio the driver's pocket-beeper.

Of course, a thief could replace the engine computer, but that could easily be made functionally impractical for self-powered theft. (These ideas came from a conversation with John Nagle of Menlo Park.)

Cynical observation: Automobile and radio manufacturers have little incentive to make products difficult to steal—thus reducing replacement demand. Instead, this is a business opportunity for after-purchase add-ins. Its cost *should* be more than repaid by theft insurance savings, to say nothing of reduced loss-trauma and increased peace of mind.

WHY DETROIT AUTO MAKERS AREN'T COMPETITIVE

Last year Stanford held a three-day seminar on computer-supported collaborative work (CSCW). Attendees included senior staff from numerous major companies—Kodak, Northrup, McDonnell-Douglas, General Motors, etc.

One of the topics was user interfaces. In its discussion, the senior participant from one of GM's automobile divisions vigorously stated that he didn't care what anybody said, he wasn't about to adopt any user interface that required taking his hands off the keyboard. (Ain't gonna be none o' them mouses in *his* division, by golly!) If I remember correctly, this guy was a key decision maker regarding what computer tools his design group would adopt. And then American car makers wonder why they have difficulty competing!

Somehow related: Jay Thorwaldson of Woodside commented on all those ads proudly touting auto makers' test tracks and racing cars. Said he, they don't need those tests to build safe and sturdy cars. They need 'em to see how close they can shave tolerances without falling apart.

HIGH-TECH WEAPONS FOR DEFENDING FREEDOM

(This was written the weekend that Gorbachev resigned as party head and the Soviet Communist Party fell apart. However, it's as applicable to other nations as it is to the USSR.)

After the second frightening night of the Soviet takeover attempt, the design came to

At a recent Stanford symposium, a key decision maker from a GM design group vigorously stated that he didn't care what anybody said, he wasn't about to adopt any user interface that required taking his hands off the keyboard. And then American car makers wonder why they have difficulty competing!

Copyright © 1991 by Jim Warren, 345 Swett Rd., Woodside, CA 94062. All rights reserved. Jim Warren founded InfoWorld, *the DataCast proposal for paperless electronic newspapers, Wireless Digital, Initiative, Inc., and one of the nation's largest public microcomputer conventions. He was founding host of PBS' "Computer Chronicles", founding editor of* Dr. Dobb's Journal, *and has chaired various computer professionals' organizations. He holds graduate degrees in computing (Stanford, before Reges & research ripoffs), medical information science (UC Medical Center), and mathematics.*

He also organized and chaired the recent First Conference on Computers, Freedom & Privacy, sponsored by a dozen nonprofit and industry organizations.

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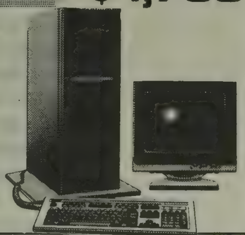

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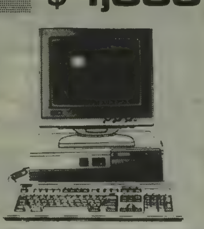

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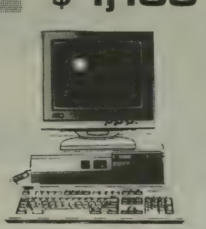

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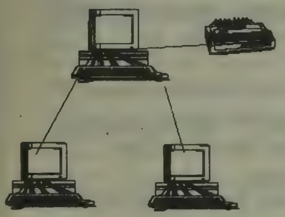

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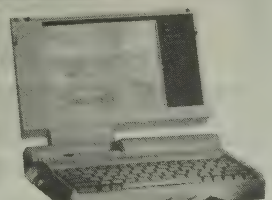

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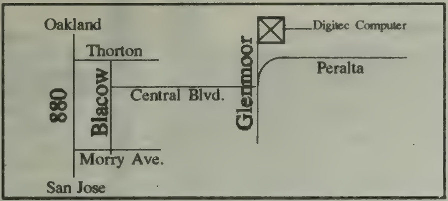

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mind for a system that can deter most fascist coups. At the time I thought, *if* the coup fails, then we—the US, Japan, and the European Community—damned-well better install this defense system, as part of any aid or trade agreement.

Basis for the design: There were great fears during the coup attempt about (a) Yeltsin and his resisters being unable to communicate beyond Moscow, (b) military units controlling broadcast stations and newspapers, and (c) no one being able to contact Gorbachev—and vice-versa.

The people's ability to communicate is the ultimate weapon for defending their freedom.

Related examples: *Public* knowledge of Watergate deposed an enthroned President. *Public* knowledge of the Pentagon Papers helped end our Viet Nam War. Other resisters and rebels realized that freedom of speech and of the press were essential to protect freedom, two centuries ago.

Realizable: Let's buy one less Stealth bomber and spend the loot on several million portable short-wave [long-range] radios. Quantity discounts available. Have one unit of every ten include a powerful transmitter. Any aid or trade agreement should permit us to randomly distribute these units to anonymous recipients in every city, town, and village. Specify that aid and trade would be suspended if officials ever require radio ownership registration. Transmitter *use* could be licensed, but owners would be encouraged to avoid transmitting except to defend their constitutional government. (Of course, it'd be nice to add spread-spectrum digital modems to these freedom defense devices, but that's a computer junkie's optional daydream.)

For a comparable price, Japan could similarly distribute a couple million low-cost copiers—again, suspending aid and trade if registration or licensing of use or ownership is ever required. Widespread availability of such copiers would also jump-start Soviet business and trade.

Would the results—and impacts—of Tianamen Square have been better if the students had radio contact with every town and village in China? On the other hand, the CIA might oppose distributing such dangerous devices to anonymous citizens in El Salvador or other US-run dictatorships.

Related technology: It's nice for citizens to have millions of unregistered guns in their closets, but they're only useful after the police or military begin shooting. Of course, some folks prefer that government have a registry of all (legal) gun owners. Hitler found this invaluable in Germany and adjacent nations. Others folks prefer that only the military and police possess guns—just as the Soviet coup leaders demanded on the first day.

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When investment bankers dig into the murky history of a corporation, they are often looking for some small detail that will, in negotiations down the road, give them an edge during the hardball game of mergers and acquisitions.

An investigative reporter just digs. Put onto the story through any number of sources—a conversation overheard, an anonymous tip, a plain manila envelope stuffed with photocopied internal memos—the writer is trying to establish some kind of history, some kind of logical sequence. The reporter asks the question: "How did things get to be this way, and why?"

For both investigators, background information is vital; a traceable history is vital. If the company under investigation is publicly held, our investigators are in luck; publicly held companies must, by law, submit reams of documents and statements each year. That's the good news. The bad news is that sifting through these documents is tedious, mind numbing work.

A good investigator, no matter how conscientious, can easily miss something after a few hours hunched over a mountain of musty-smelling paper in some county clerk's dusty archive room. And even though investigative reporters joke about their only hot date for the week being "a few days alone with SEC filings and a Xerox machine," the work is grueling.

Fortunately, there are several online databases that make this work, if not enjoyable, then at least tolerable. And because it seems that every information provider is competing for those few "info-dollars," you're often stuck wondering just which database contains the right information for you. Since no one has the luxury of an unlimited online budget, the choosing process becomes even more critical.

The challenge, therefore, is to find those databases (for one person can glean all the necessary information from a single source) which add value to the basic raw data of facts and bottom-line figures in those four-color glossy annual corporate reports. Three such databases that work well in conjunction with each other are provided by Moody's Investor Service, Inc., whose parent company is the venerable Dun & Bradstreet.

MOODY'S CORPORATE PROFILES

Moody's likes to tout this database as having information on "3600 of the most important publicly held companies."

What are the criteria for making this "most important" list? A spokesman for Moody's says it's "any company listed on the New York Stock Exchange, the American Stock Exchange." Wall Street watchers can do the math in their heads: The sum of the companies traded on those two exchages leaves the 3600 figure 1300 short of full coverage.

"In addition, we also provide information on some 1300 selected companies that trade over the counter," the D&B spokesman said. He couldn't, however, give any criteria for how these 1300 "selected" companies were chosen.

The focus of Moody's Corporate Profiles is the concise descriptive and financial abstracts of each company. The strong suit here is the financial information provided—in tabular form.

"The ability to download financial information and import directly to one of our investment spreadsheets is invaluable," says James Posner, president of the prestigious retail marketing and consulting company James Posner Associates, Ltd. Posner takes information directly from the screen and "pops" it into a customized Lotus spreadsheet for quick analysis. "With the emphasis in our society today on graphic images, we find our clients are thoroughly impressed when we can show them complex financial data in the form of pie charts, bar-graphs with drop shadows and all, in full color." *USA Today* does the same thing with financial data its researchers pull from Moody's.

"You see the results of our reporters using Moody's every day," says an editor in the Reston, VA. offices of *USA Today*. "The graphics department uses the reporters' findings to come up with the graphics that have made our paper the most emulated in the business."

And Moody's certainly gives you enough such tabular information to draw from. You'll find fifty-four searchable fields that include information drawn from such obvi-

"The ability to download financial information and import directly to one of our investment spreadsheets is invaluable," says James Posner, president of the prestigious retail marketing and consulting company James Posner Associates, Ltd.

RESOURCES:

Moody's Investors Services
99 Church St.
New York, NY 10007
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Brock Meeks is a Washington, D.C., based journalist. By virtue of the "three amigos" he's limited his "green" investments to his local garden shop where he's heavily invested in grass-seed

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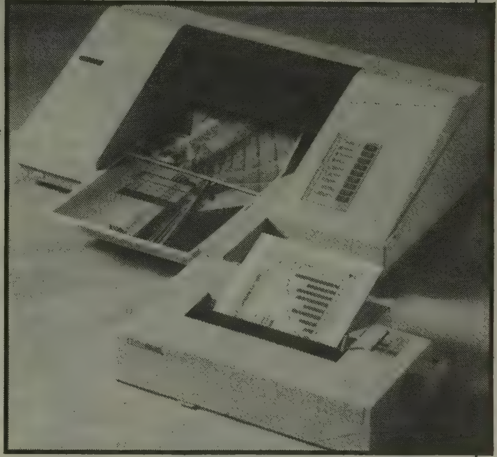

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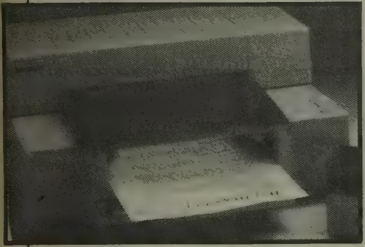

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ous documents as SEC filings and annual reports, but Moody's also draws from a more diverse information wellspring—including news releases, stock exchange bulletins and lists, major metropolitan newspapers and trade journals, and public information from whatever regulatory agency or agencies the company must report to.

Anyone with even a cursory knowledge of financial data will find the information here pretty straightforward. Five years of annual earnings and dividends per share, P/E ratios, a balance sheet, loan distribution, interim dividends, breakdown of revenue sources (commercial or governmental) and various statistical records such as book value, return on equity, etc. But such figures, in and of themselves, are hardly exciting. The real information workhorse here is the capability to search each field in a record.

"With just a few keystrokes I can screen companies, find possible acquisitions or scope out our competitors' latest moves," says Al Lynch, director of planning and research for J.C. Penney Company. "It's a real competitive edge to have all these figures in searchable form."

DIGGING IN REAL TIME

Hands-on time; here's a real world example.

Let's say that you're researching the latest craze for socially conscious investors: "ethical investing." This buzzword phrase is loosely defined as a mutual fund that requires all the companies in its portfolio to adhere to some kind of ethical or environmental standard.

Are these "environmentally correct" mutual funds really investing in viable companies? Using Moody's you could search for all companies involved in toxic waste management with a return on assets of 15%. Each record returned would show you concise textual information, *exclusive* to Moody's, summarizing important quarterly developments and comments on the company's overall short-term future.

Using the search criteria I described, I found that one company listed in the portfolio of a "Green" mutual fund I was interested in actually pulled in 65% of its revenue from a government agency doing work on "environmentally sensitive facilities." In common jargon: This company was charged with finding suitable launch sites for land-based ballistic missile systems. (I didn't invest.)

Moody's also provides, free of charge, a "MiniSearch Guide" that comes laminated and fits neatly into a three-ring binder. Nice touch. The guide is a godsend to anyone other than a full-time information specialist and contains helpful search information from Moody's Corporate Profiles and two other databases.

ALL THE NEWS YOU CAN USE

The two other databases in this trio from Moody's are Moody's Corporate News, US, and Moody's Corporate News, International. The information found in the US database draws from the print content from other Moody "news report" hardcopy publications: *Bank & Finance, Industrial, OTC Industrial, Public Utility,* and *Transportation.* The international database is stockpiled with news from *Moody's International News Reports.*

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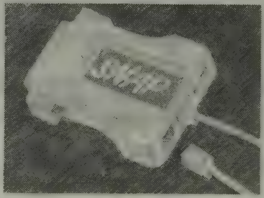
Continued on page 198

Hassle-Free Printer Sharing

Low-cost, modular printing network for up to 16 computers



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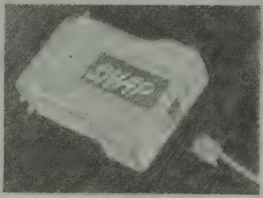

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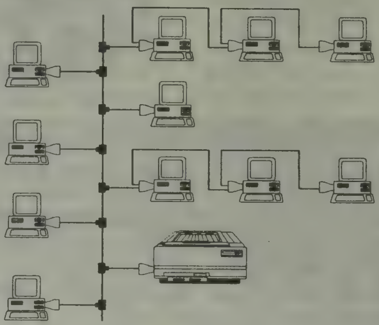

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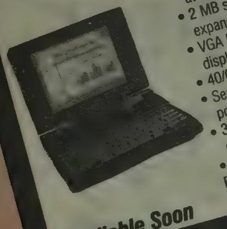

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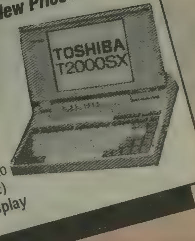

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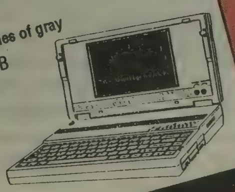

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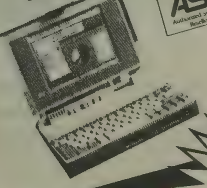

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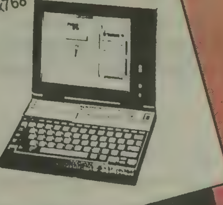

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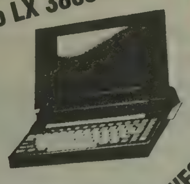

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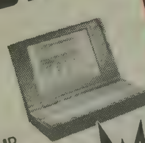

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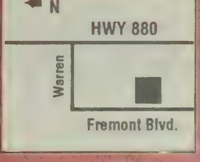

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The LX-29000 uses the same lightweight, small-footprint, 300 dpi, 4 ppm Canon LX engine used by HP, Apple and QMS, so supplies and service are never a problem. And Canon's patented all-in-one cartridge eliminates all that toner mess.

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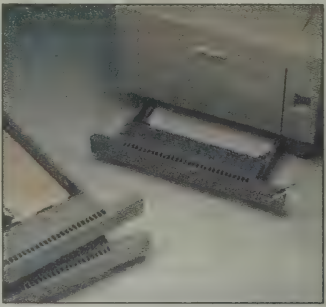

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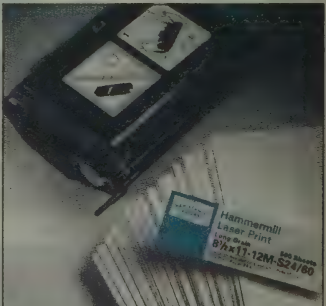

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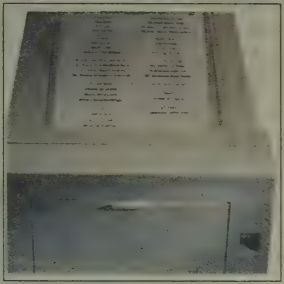

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NEC Silentwriter II Model 90	213	Minolta	44	Yes	$209	$1595
QMS-PS 410	106	Canon	26	Yes	$79	$1925
QMS-PS 810 Turbo	99	Canon	44	Yes	$89	$3995
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A Portable CD-ROM

With The New CD-Porta Drive You Can Use Your CD-ROM Discs With Your Notebook Computer As Well As Your Desktop System

BY ED KAHN

Laptop computers have come a long way to significantly close the gap with desktop systems, nevertheless some hardware requirements still need a desktop machine. CD-ROMs, for instance, have generally required a full-size machine because most portables do not offer an expansion slot for the necessary card. Even those portables that do have an expansion slot were not really suited to CD-ROMs because of the bulk of the drive itself. In any case, none of the small notebook computers have had expansion slots, so the CD user is out of luck. That has all changed.

CD Technology

CD Technology recently introduced the CD Porta-Drive with all of the additional hardware to make it work with almost any computer you have—portable or desktop, IBM or Mac. That's right, they have made a drive that will work on virtually any microcomputer you have. The idea is so simple that it is a wonder that nobody did it before. To make the system work, they had to develop different interfaces for the three classes of computers. The drive itself ($895) is the same for all installations. But that is where the similarity ends. For IBM and compatible desktop systems, they sell a card and cables ($200) that let you install the drive in a fairly conventional manner. You put the card in the slot and install a CD-ROM driver, which is included, into the computer. This involves the installation of a few files and modification to your config.sys and autoexec.bat files.

For portables, the installation is even simpler. The drive itself is a SCSI device, which is why it is able to work on all varieties of computer. What CD Technology has done is develop a simple SCSI adapter ($220) that connects through the parallel port. The instructions for installation are straightforward and simple: Set the drive up, with its own power supply, and then plug the SCSI adapter into the parallel port. The adapter is tiny—smaller then a deck of cards—and has two ports. One is for the SCSI device and the other is for a printer. So even though you have the drive attached through the parallel port, you can still connect a printer to your portable computer.

You will need to install the software that lets your computer recognize this additional device. Installation is almost automatic. You simply put the supplied disk into the floppy drive and type "install." All of the files are copied into a subdirectory and the autoexec and config files are modified—unless you instruct the software not to do so. Once you reboot, you are in business. Reading the instruction manuals took considerably longer than the actual installation.

The story does not end there. If you like, you can add other SCSI devices in daisy chain fashion to the CD-ROM drive. The ability to add up to seven devices is one of the advantages of SCSI. At the end of the final device—in my case, the drive itself—you must add a terminator. This is a small plug that comes with the SCSI adapter. My only complaint with the package is that it would have been helpful if they had labeled the terminator.

This is a high-quality CD drive. It is much faster than an older model I use on my desktop unit and very compact, measuring approximately 6" x 9" x 2". This, like all of the new CD-ROM drives, handles audio as well as text and graphics. This drive has jacks for audio output and a jack for earphones. For an extra $60 you can buy the jukebox software that allows you to play standard audio CDs.

After I installed the system, I tried a bunch of CD-ROM disks. The most interesting for me was United States History on CD-ROM ($395). This disk contains over a hundred US history books. In addition, there are a thousand photographs as well as maps and other illustrations. It is fascinating to have all of this material available in an easily accessible format. The software makes it easy to browse through the collection of books or even search for words and combinations of words as well as subjects. These days, there are enough interesting CD-ROMs available to consider adding this capability to your system.

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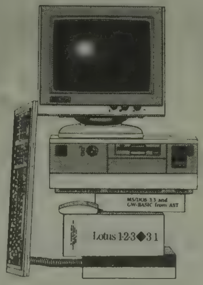
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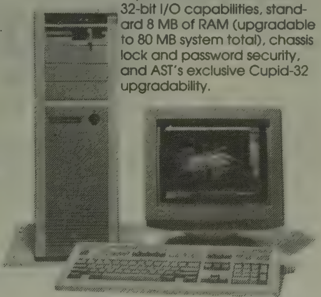

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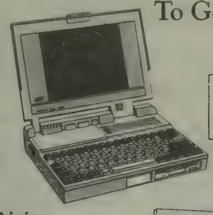

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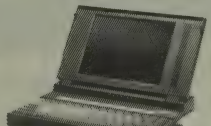

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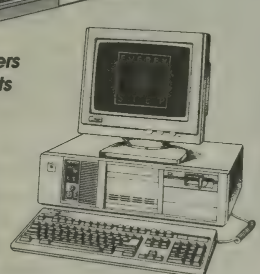

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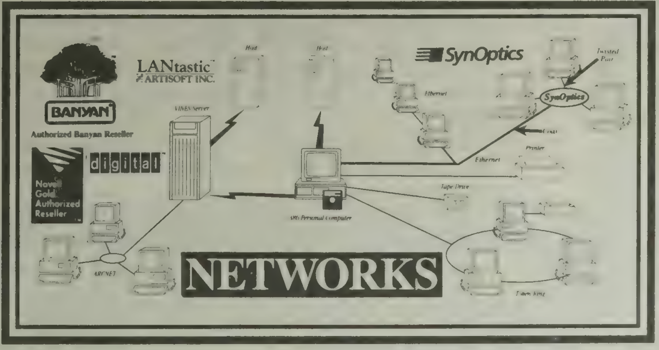
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Computer Of The Month

Dell 320N

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Sunnyvale, CA 94086
(408)752-8500

Dell 320N $2499.00
Dell Computer Corp.
9505 Arboretum Blvd.
Austin, TX 78759
1-800-426-5150

US History on CD-ROM $395.00
Bureau Development, Inc.
141 New Rd.
Parsippany, NJ 07054
(201)808-2700

It's hard to believe what a success Dell has become. It was only a few years ago that we read about this kid in Texas who was building computers from components and reselling them. Now the company is a highly respected name in the business. A couple of years ago Dell introduced a 15lb. laptop that was superb and got great reviews. Now they have followed that up with an equally exciting notebook entry.

The 320N is an 80386 system running at 20MHz with a 40MB hard disk, or an optional 60MB. This design is one of the best I have seen. It is housed in a sleek case, with rubber pads in several places to protect it from shock.

The unit comes with 1MB of RAM, expandable to 5MB. This allows it to run Windows or DESQview. Although the system does not include an operating system, they offer a nice package including MS-DOS 5.0, Windows, and a mouse for $149. With the operating system alone costing $119, it is certainly worth the extra $30 for this package. An interesting twist is that the software comes preloaded on the system, but you don't get any distribution disks. Although full documentation is included, there seems to be a new way of doing things, so you must follow their instructions for loading the software onto distribution disks. But be sure to make the distribution disks or you could be out of luck in case of a disaster.

The machine opens up to reveal an 8.5" screen, measured diagonally. The screen offers a wonderfully clear image of white on a black background; if you prefer, the colors can be reversed. The resolution, like almost all machines today, is VGA. An external color monitor is easily attached through the port on the back of the computer. Also interesting, through the setup software you have a choice of three different typefaces. I have never seen this feature on any other computer.

The keyboard is exceptionally well designed. I have grown to really like Home, End, PgUp, and PgDn keys to be separate from the cursor control keys, and that is just the way Dell has laid out the keyboard. The number keys, of course, are embedded, but you can buy an optional numeric keypad ($149). If you want to use a keyboard of your choice, it connects easily.

All of the ports are located on the back of the computer, neatly protected behind a sliding door. A single parallel port, as well as a serial port are included. Although you generally need two serial ports these days, this system is more than adequate. In addition to the serial port, there is a mouse port; and an optional 2400 baud fax modem ($399) is available. This will still leave the serial port free.

Dell offers a full thirty-day money back guarantee and service as good as any in the industry. The documentation is excellent, but not overly cumbersome. This computer can be configured just about any way you want. There are many options available. Just ask for what you want.

One accessory that is worth buying, however, is the deluxe carrying case ($99). It is the only case I have seen that actually has enough room for the computer and all of the accessories and things you usually carry along with a portable. There are two zippered pouches: one on each side of the case. One holds the computer and the other has a couple of compartments for power supply, cables, a mouse, and whatever else you need. In addition, there are a couple of Velcro fastened pockets for disks, pens, and such.

Just as I was finishing this review, I received word from Dell that they have introduced a new improved 320N+ with increased performance made possible by the inclusion of a nickel-metal hydride battery pack, increased memory capacity, and a larger hard disk. Details of this new model are sketchy, but worthwhile checking out if you are serious about the Dell. The new model is more expensive, but it is the leading edge of the new technology. The new batteries, for instance, will last four to five hours rather than the two to three hours with conventional batteries. This new Dell 320N+ may well be the notebook against which all others will have to be measured. ■

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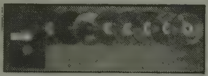

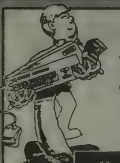

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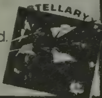

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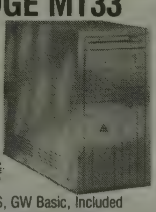

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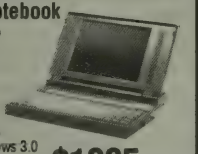

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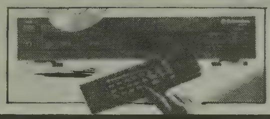

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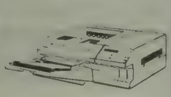

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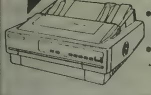

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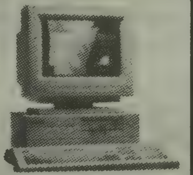

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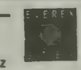

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Publishing Your Own CD-ROM

New Innovations Have Lowered The Cost And Made It Easier To Develop A CD-ROM That Fits Your Particular Needs

BY PETER JOHN HARRISON

CD-ROM technology holds the promise of storing large volumes of information on a single, easy-to-distribute medium. A single disk can hold as much formatted text as twenty four-drawer filing cabinets, or roughly 272,000 pages of information. This huge capacity has made it the medium of choice for distributing data-intensive applications, like online encyclopedia sets and atlases with extensive demographic information.

Until recently, however, the cost of developing limited distribution CD-ROMs has prevented most businesses from using this powerful and flexible medium for applications adapted to their own, specific needs. Companies like Meridian Data, Inc. and Optical Media International have brought those costs down by developing CD-ROM "pre-mastering" hardware and software combinations that allow PC and Mac users to create tapes they can either send to a CD-ROM mastering and production facility or record on a disk on their desktop.

CD-ROM is an ideal medium for many in-house applications. Document storage and retrieval on CD-ROM replaces rows of filing cabinets, while cutting storage costs, allowing multiple users access to the same information, and preventing documents from being misplaced, altered, used inappropriately, or damaged by flood or fire. Other practical uses include distributing large, static database files, such as a parts catalog with part names, numbers, and descriptions, as well as ordering and pricing information. The range of possibilities is as wide as your imagination.

PUTTING A CD-ROM TO WORK

ComputerLand used to distribute hard-copy cut-and-paste materials to its retailers. Advertisements were assembled by manually creating a layout pasted together from these materials. When ComputerLand went looking for a way to transfer this process onto the PC, "CD-ROM seemed the logical way to do it," says ComputerLand Marketing Specialist Robert Atkinson.

Using Aldus PageMaker and ComputerLand's CD-ROM *Electronic Ad Kit*, retailers can create a complete newspaper ad from a collection of over 150 images containing product pictures and descriptions. This new method can cut the time it takes to create an ad to fifteen minutes, about a quarter of the time it took with the older cut-and-paste paper method. ComputerLand plans to distribute other CD-ROM-based marketing materials, like its *Proposal Kit*, a marketing tool designed to help create sales proposals targeting the corporate environment, and an electronic slide show to demonstrate ComputerLand products and services.

Meriden Data's VR Publisher systems helps you create your CD-ROM.

Apple Pacific, a division of Apple Computer, also uses CD-ROM to distribute marketing materials. "CD-ROM is an ideal distribution media for marketing materials," says James Taylor, a multimedia systems consultant for Apple Computer. CD-ROM allows Apple to "control their message, the essence of what Apple Computer wants to say" about its products.

Apple's Multimedia presentations use HyperCard and CD-ROM to present textual information, and to launch applications that will paint pictorial screen backgrounds, play stereo audio presentations, and instruct a laser disk video deck to play specific sequences. The effect is a breathtaking melange of still images, text, audio, and video information that makes you wonder if you're at Disneyland instead of a corporate sales presentation.

Apple Pacific and ComputerLand's marketing divisions engineer CD-ROM's in-house using software running on Macintosh and PC-compatible computer systems hooked to a peripheral device. This allows them to create a CD-ROM disk image on magnetic disk, and then emulate a CD-ROM's "read only" environment for testing. Once the CD-ROM image has been finalized, it is copied to tape and either sent to an outside CD-ROM mastering facility or used with a desktop CD-ROM recorder.

CREATING YOUR CD-ROM

The CD-ROM part of the process is pretty easy. With Meridian Data's VR Publisher system, for example, you just create regular disk files (using either your regular hard disk or a partition on the VR Publisher's disk subsystem), then use a VR Publisher utility to copy them to the CD-ROM disk image. Still images, text, and audio sequences can all be copied and stored in the CD-ROM image.

"The hard part in engineering a [CD-ROM] disk," advises Taylor, "is deciding what to put there, and limiting yourself to those things. People have a tendency to... try to use the entire disk, use it as a

RESOURCES

Optical Media International
180 Knowles Dr.
Los Gatos, CA 95030
(408)376-3511
FAX: (408)376-3519

Meridian Data, Inc.
5615 Scotts Valley Dr.
Scotts Valley, CA
95066
(408)438-3100
FAX: (408)438-6816

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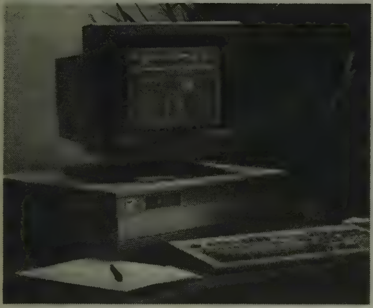

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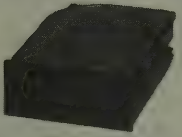

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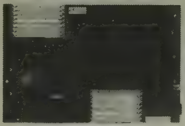

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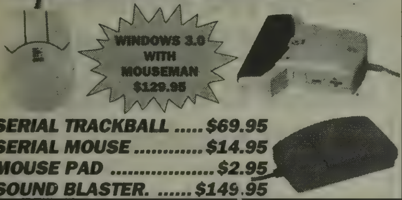

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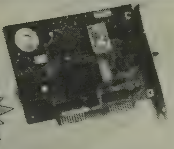

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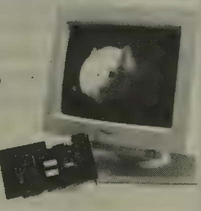

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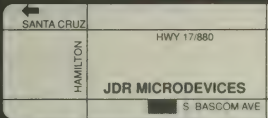

KEY CODE: #2133

dumping ground for all kinds of stuff, and [the original reason for creating the application] gets lost.”

It's better to decide on what kind of application you want the disk to contain, then stick to that application. A parts catalog, monthly report images, and a sales pitch belong on separate disks, not just one.

Selecting data retrieval software is another important consideration when developing a CD-ROM application. If you're developing a series of cut-and-paste images, DOS or the Mac Finder should be an adequate retrieval mechanism. Parts catalogs, and other common database applications, can usually use a standard database engine, like Paradox or HyperCard. If, however, you're storing monthly reports, magazine articles, or other textual information, your end-users will want to be able to perform a search through the material. There are many, more powerful search and retrieval packages that will help end-users locate that needle in a haystack of data.

Once you have assembled your data, selected the retrieval software, and built your CD-ROM image, you have several options for cutting the actual disks. For many companies, the easiest will be to copy the image to tape, and send it to a mastering facility. For $1000–$1500, someone else will create a glass “master” from which an unlimited number of CD-ROM copies can be created, at a cost of about $2.00 each.

Another alternative is to purchase a CD-ROM recorder. This allows you to cut your own ready-to-use CD-ROM disk. CD-ROM recorders are expensive, though, costing $20,000 to $25,000 each, and the special “writable” disks cost about $80 each and take an hour each to record. The cost of having and using your own CD-ROM recorder can be prohibitive, unless you plan to produce limited runs of different disks or need to prototype several versions before sending it to a mastering facility.

Apple's Multimedia presentations use HyperCard and CD-ROM to present textual information. The effect is a breathtaking melange of still images, text, audio, and video information that makes you wonder if you're at Disneyland instead of a corporate sales presentation.

You can also send your tape to someone who has a CD-ROM recorder, and have them create your prototype and limited-run disks. Meridian Data, for example, charges $580 for the first disk, and $330 for subsequent copies.

No matter what information you assemble, for whatever application, or reproduction options and retrieval software you select, creating a CD-ROM tailored to your needs and environment has never been easier or less expensive. CD-ROM as an important business tool has finally become an economically viable option. ■

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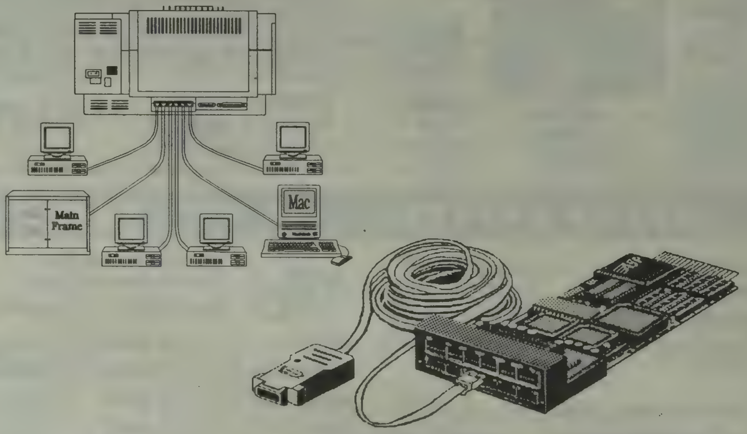

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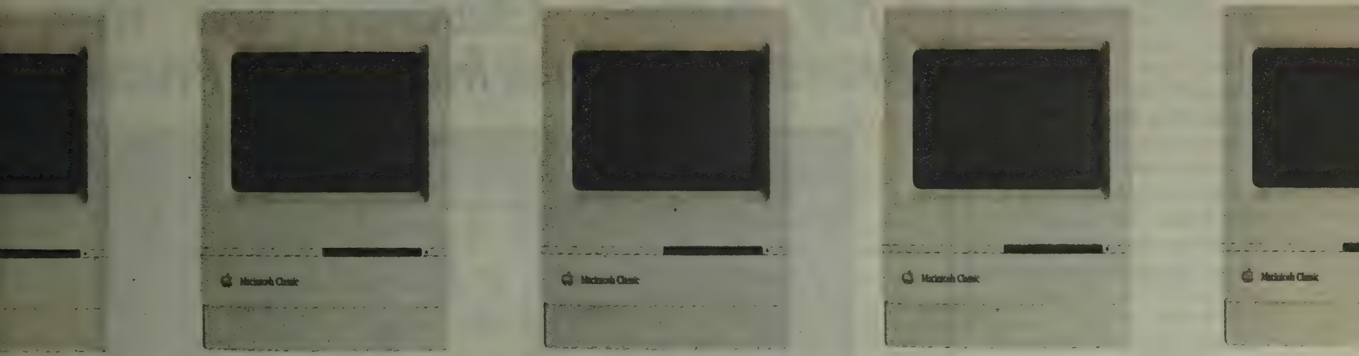

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Included are other useful desktop utilities including Notebook, a flat-file database program; File Manager to help you organize your files; and Forms Maker to create custom forms for Mail, Notebook, and Calendar.

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New LaserCard Si connects any combination of PCs, Macs, minis, terminals and LAN servers to an HP LaserJet IIISi

SAN JOSE, California -- Wilco AMS Inc., a supplier of workgroup laser printer systems, recently announced the LaserCard Si family of "plug-in" printer sharing systems.

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LaserCard Si (LC15Si)

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Laser Printer Vendors Recycle Toner Cartridges

It's Easy, Good For The Environment

BY PAUL HOFFMAN

Until the paperless office arrives, personal computer users will continue to create a fair amount of trash associated with their computers. The most common waste output for most people is paper—which, fortunately, is easy to recycle. The white paper that almost everyone uses in laser printers is the highest-grade and most sought-after recyclable paper anywhere.

PCs themselves don't create much waste other than the occasional bad floppy. Few parts are even taken out of PCs; most machines that are outgrown are usually "handed down" to other people within a company or to a local nonprofit group. However; laser printers do create a fair amount of waste, since you need to feed them toner cartridges every few thousand pieces of paper.

Until recently, there were not many alternatives for recycling toner cartridges. In some cities, you could get toner cartridges refilled with toner and reuse them. While refilling is a great use of the cartridge that creates almost no waste, few laser printer users take advantage of refilling services, the primary reason being that refilled cartridges often give less-than-perfect prints, and some leak toner from the holes used to empty or refill the cartridge. Although refilling technology has improved in the past few years, many people report many problems using refilled cartridges.

How important is recycling your toner cartridges? You've probably heard that landfills across the nation are filling rapidly and that it's costing significantly more to haul trash. Approximately ten million toner cartridges end up in landfills each year, since fewer than 10% of all toner cartridges are recycled. This number will go up rapidly as more laser printers are put into use in coming years. The rapid drop in prices on the low end of the laser printer market and the increase in home offices help compound this trend. Given that toner cartridges are almost fully recyclable, an increase in recycling efforts can make a large difference in the amount of waste PC users create with their printers.

NEW OPTIONS FOR RECYCLING

The most aggressive recycling effort to date comes from Qume Corporation of Milpitas. Qume makes a large line of laser printers, and its supplies division makes cartridges and other printer supplies. Qume recently announced a new program that allows anyone using laser printers based on the Canon SX laser printer engine to return their cartridges to Qume at no charge and get a $5 rebate. Over 80% of current laser printers are based on the SX engine (including the Hewlett-Packard LaserJet II and III and the Apple LaserWriter II series), so the rebate program covers the vast majority of the cartridges that are currently being thrown away.

Qume's deal is quite simple: You get a kit from a local computer store or by calling 800-421-4326. The kit includes instructions and a prepaid UPS shipping label. You put the used toner cartridge in its original box (including the original packaging material), seal it up, put on the label, and give it to a UPS delivery person or call UPS for pickup. Qume then sends you a $5 check.

For dealers, Qume has an even better deal: $10 per cartridge as long as you send back five or more at one time. This gives dealers an incentive to tell customers about the program and to call around looking for cartridges that people may have in their offices.

After Qume's technicians receive the cartridge, they remanufacture it (if possible) into another cartridge. They first test the cartridge, rejecting any with major defects; all components in rejected cartridges are recycled or melted and used for other purposes, such as

IBM will send out mailers to people who use IBM laser printer cartridges. IBM has already begun promoting the program to its large customers, since many of them go through hundreds or thousands of cartridges a year.

home insulation. Qume estimates that most cartridges can be used from ten to fifteen times before scrapping.

Cartridges that can be reused have worn parts replaced. The corona wire is tested and cleaned, the waste bin is emptied and cleaned, and all parts are inspected. The drum is recoated with a Qume-specific process called Direct Image Polymer (DIP) that makes the remanufactured cartridge last longer than the original. They also use a higher-quality toner than is available in most cartridges. Qume provides a lifetime guarantee with every remanufactured cartridge and a toll-free telephone number for technical support.

Qume says that its remanufactured cartridges last one-third longer than standard SX cartridges, providing 5300 pages instead of the standard 4000. In addition, the DIP process gives more consistency of print than standard SX cartridges, and black images come out about 10% denser. The recycled cartridge can also cost much less than a standard cartridge, because Qume did not need to manufacture all the parts. Qume predicts that the cartridges will cost about 30% less than competing SX cartridges.

In the manufacturing process, Qume is also keeping an eye on the environment. Instead of the standard foil wrapper that most cartridges come in, Qume is using a light-sensitized black paper box. The cartridge box is placed in an exterior container without using the large styrofoam ends that most cartridges come in. Both boxes are fully biodegradable.

The new cartridges, called Environmentally Correct Cartridges, are available now from many dealers. They are distributed by Azerty Corporation, a major office supply company in New York.

IBM'S SOLUTION FOR NON-REUSABLE CARTRIDGES

IBM's toner cartridges are not as reusable as standard cartridges. In fact, IBM recommends against even refilling them, since the parts usually wear out around the same time that they run out of toner. However, IBM also wants to prevent people from simply throwing away old toner cartridges, and has thus started Operation ReSource to help scrap the materials in the cartridges.

Like Qume's program, IBM will send out mailers to people who use IBM laser printer cartridges (Operation ReSource only works with IBM cartridges); call 800-848-9894 for information. IBM has already begun promoting the program to its large customers, since many of them go through hundreds or thousands of cartridges a year. You simply repackage the cartridge and send it back to IBM. The program is run through Lexmark International, IBM's spin-off that makes personal printers and supplies.

Since IBM's cartridges have no reusable parts, Lexmark simply disassembles them and recycles the components for scrap. Lexmark uses mostly recyclable plastic and metal in the cartridges, and says that the only non-recyclable parts are small pieces and seals that are disposed of at the recycling center. Lexmark is using the Opportunity Workshop, a Kentucky-based structured workshop for disabled adults, to disassemble and recycle the cartridges.

Continued on page 222

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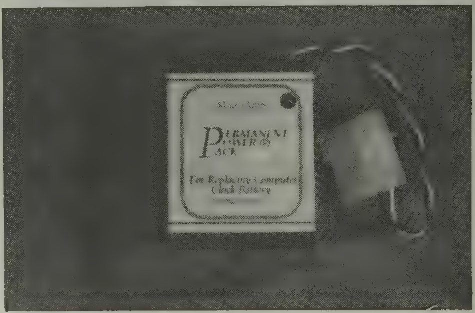

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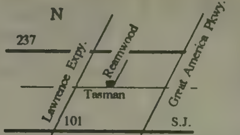

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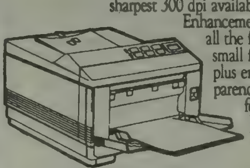

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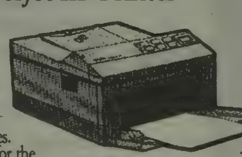

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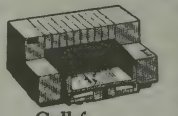

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HP DeskJet 500

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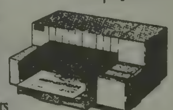

This high quality 300 dpi personal printer gives the highest quality output at the lowest possible price. It boasts water-resistant ink, a 100 sheet paper feeder, and expansion slots for memory and font cartridges. It comes with HP's dependability, and a three year warranty.

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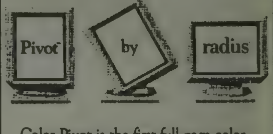
Radius Color Pivot Display

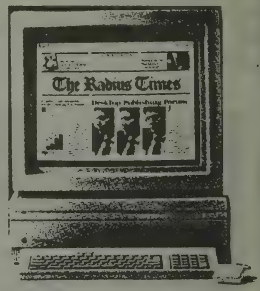


Color Pivot is the first full-page color display. It offers both portrait and landscape orientations for the best view in any application. Color Pivot shows 256 colors, is compatible with the IIsi and IIci built-in video (for 16 colors), and can be connected via an interface card to all color-capable Macintosh computers. Color Pivot even lets you pick your resolution: full-page or WYSIWYG 72 dpi.

Call for best price

radius

Radius Two Page Display



The Radius 19" Two Page Display is the ideal system for working with sharp text and black and white graphics—across two full pages. Depending on the interface card, it can run on the Macintosh in 256 grey or black and white, and on the IBM PC in black and white. The TPD provides paper-like images that maintain superior brightness, contract and focus across the entire screen. A high resolution of 1152 x 882 and a refresh rate of 71Hz provide a full two pages of flicker free images.

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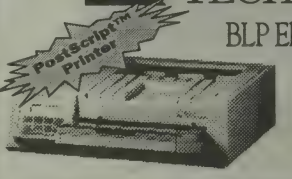

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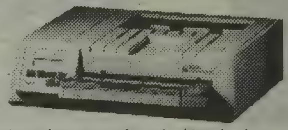

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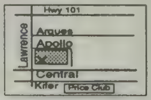

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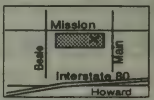

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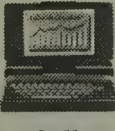

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Includes 1MB RAM, 40MB disk, keyboard and floppy drive

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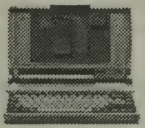
The 16MHz, 80386SX based T2000SX is a tiny portable that packs major punch. It is expandable to 9MB RAM and features an IBM compatible VGA display. So don't let its diminutive size fool you. When it comes to power, this PC stands tall.



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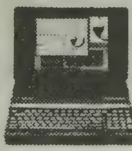
Includes 1MB RAM, 40MB disk, ergonomic keyboard and floppy drive

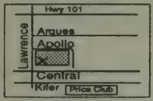
T3200SX

The T3200SX is the portable computer with everything you'll need down the road, including six expansion slots and five interface ports. That, plus the 16MHz 386SX processor and VGA display make it more powerful than many desktop computers. See Toshiba's most internally expandable portable today!



Call

Includes 1MB RAM, 40MB disk, expansion slots, keyboard and floppy drive



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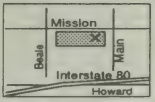

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The Do-It-Yourself Server, Continued

Controllers, Cards, Etc.

BY YACCO

This was to have been the final part of a series on building a network server. Then up popped some last-minute news, and a few details had to be deferred until next month. We'll cover some key issues here nonetheless.

BUILDING YOUR OWN SERVER, PART 4

Last month's column included a photo of the nearly completed server with its case opened and waiting for additional installations. Here's more of what went in before it was closed.

FLOPPY CONTROLLER

The Longshine controller I mentioned a couple of columns back offers a fairly good solution for the new 4MB floppy drives—with one small flaw. Its software has a clumsy formatting solution for versions of DOS before 5.0.

There's an alternative controller, though, that works with the DOS FORMAT command for any version of DOS back to 3.2. MicroSolutions accomplishes this with the driver that's included with its CompatiCard IV. In addition, the board's firmware overcomes limitations that can arise from hardware changes in the drives themselves.

Originally, the hole on 4MB media was positioned just like it is on a 2MB diskette (to those obsessed with decimals and formatted capacities that's a 1.44MB). However, the 4MB media currently shipping from vendors in the States have an offset hole. Early drives don't identify the new media properly without special hardware and software. Old media are also misread by the new drives without special equipment. The TEAC part number for the old drives is FD-235J 653-U. The TEAC part number for the new drives is FD-235J 3650-U. Be sure to order the new style drives if you need widely available media and don't have a controller and device driver designed to handle the mismatch.

Incidentally, although Toshiba developed the 4MB drive, and others like Sony are planning to sell them, TEAC seems to be the first vendor to ship the latest version in quantity. This may be because of those convention changes.

Fortunately, MicroSolutions has the wares (soft and firm) to handle either drive type. CompatiCard doesn't rely on the hole sensing ability of the drive at all. Media on a Compticard-equipped computer are even fully compatible with the IBM PS/2. PS/2 computers can format 1.44MB of data on an unmodified 1MB diskette, assuming that the coercivity of the media is sufficiently high. The CompatiCard IV will read such a disk, and it formats them too—just like the PS/2. Other systems will not read such a diskette (unless you first punch a second hole in it with a special tool).

Like the Longshine board, CompatiCard can support up to four drives. There are two internal connections and one external (drives 3 and 4 only). It provides extensive flexibility in the selection of card address, BIOS address, interrupts, DMA channels, and more. CompatiCard also has some special abilities. It will boot from any floppy drive attached to it. A background program is included to format disks while other DOS applications run. It can run from a loadable driver instead of its ROM-based BIOS. It works even if another floppy controller is present.

Copyright © 1991 by Wayne A. Yacco. All rights reserved. An editor, writer, and consultant specializing in microcomputers and their business applications, Wayne Yacco writes articles, columns, and reviews for many trade and business publications. He can be reached at Box 269, Burbank, CA 91503.

For your system to work without adjustments, you need to limit it exclusively to EISA boards if you use any EISA boards at all. Apple's NuBus and IBM's Micro Channel enjoy an advantage over EISA in the area of system configuration because they don't share the bus with any nonconforming products.

I also like the CompatiCard's convention of using the same Berg strip connectors that hard/floppy controllers use—rather than the edge connectors many floppy controllers use—because I can use it with the cables from a hard/floppy drive kit. A substantial user's guide, full of examples to help with configuration, is included too.

MicroSolutions has impressed me with its soft- and firmware before. This is the company of UniForm PC and BackPack fame.

NETWORK CARDS

Impressive wares are sometimes what's needed during a system configuration. Network interface cards, or NICs, are a case in point. They're available for a variety of media and many different protocols. In addition to matching AUI, coax, twisted pair, fiber, etc., a NIC must support your network's protocol: Ethernet, Token Ring, Arcnet, or proprietary. That requires a BIOS which usually resides on the NIC in a ROM (read-only memory) mapped into a reserved memory area between 640K and 1MB. The NIC will also require interrupts to alert the processor that network transactions are pending, and ports to pass data into and out of the system.

So, you also have to find a NIC that will coexist with all the other components, and drivers, in your system. It's no fun, but it's something you have to do with any system, not just one you build yourself. Many expansion boards, including network adapters, offer alternative addresses and interrupts that you can choose—with jumper settings, dip switches, and/or software—to make configuration easier.

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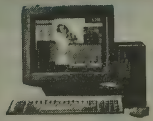

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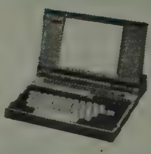

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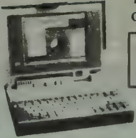

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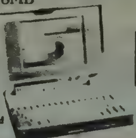
- 80MB Hard Drive
- VGA output 32 shades
- DOS 5.0
- 1 Serial/1 Parallel port



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- VGA-16 levels of grey
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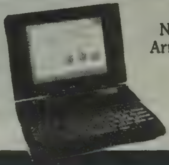

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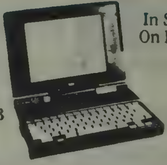

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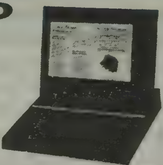

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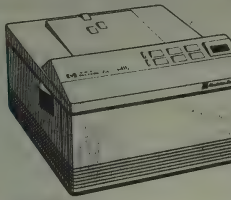

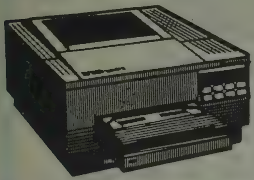

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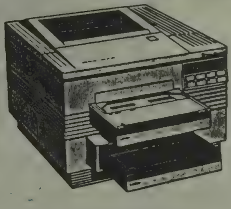

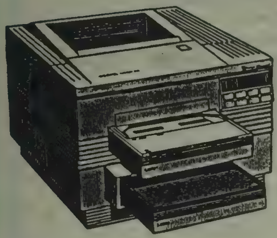

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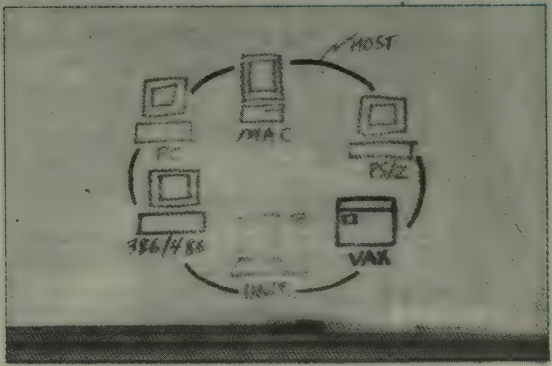

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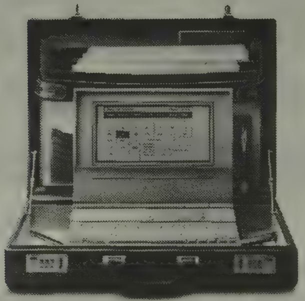

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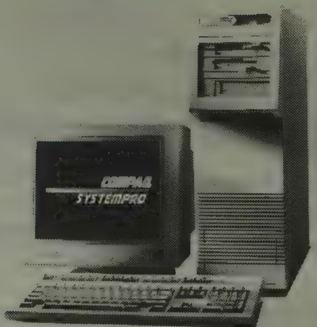

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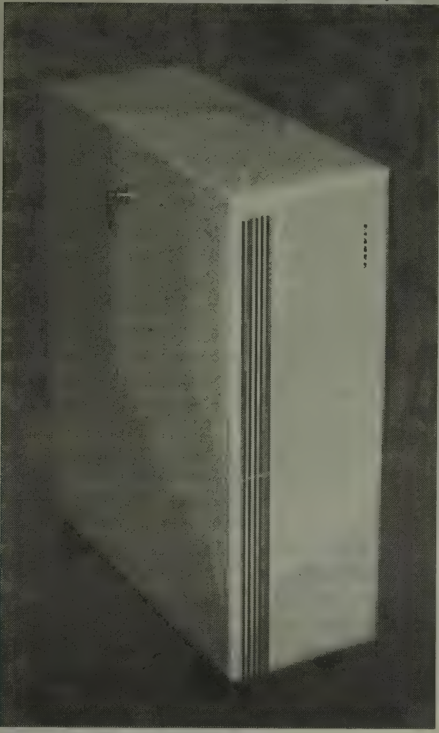

The finished do-it-yourself server.

Some boards don't. It stands to reason that the more boards like the CompatiCard you can find, the easier an installation will be. Software diagnostics such as those I've discussed here in previous columns are also very helpful.

EISA boards make configuration easier by adhering to resource- sharing protocols that help you automatically configure them. Lamentably, for your system to work without adjustments, you need to limit it exclusively to EISA boards. Apple's NuBus and IBM's Micro Channel enjoy an advantage over EISA in the area of system configuration because they don't share the bus with any nonconforming products. All Mac II and PS/2 expansion boards are supposed to observe a resource-sharing standard. On the other hand, the advantages of EISA's openness are the ability to mix in ordinary AT-style (ISA) cards, and low costs.

A PRACTICAL EXAMPLE

Some configuration juggling was required to put this basic system together. I had originally intended to install a Priam 330EC as my network drive for this server. It's a 330MB ESDI drive that includes a controller. (My networks don't have enough users on them to justify several gigabytes of storage.) Unfortunately, the bundled controller refused to work in this machine. Although the DTC-built board is very limited in its configuration options, that didn't seem to be the problem. Even after everything but the video and floppy controllers had been

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removed, it wouldn't work.

The CompatiCard let me try enough alternatives to essentially eliminate it as a source of the trouble. That allowed suspicion to fall on a conflict with the system's 20MB of memory. Such a conflict prevents BIOS shadowing from working in this machine when more than 16 megs are installed. Since I'm more interested in adding memory than removing it, I opted to do without this drive rather than continue testing with less memory.

Luckily, this is an older drive that is now superseded by the ID340H-UC, a half-height 340MB drive with 14ms access. Priam no longer ships the DTC controller, but one from UltraStore that includes 32K of look-ahead buffer cache. I suspect it will overcome the DTC's apparent limitations, and look forward to trying it.

I've been using Priam drives for years, and I really love them, because not one of them has yet crashed on me. They're real tanks. They include their own partitioning and driver software, and ship ready to boot under DOS. Plus, they're NetWare compatible and pretested. Just a simple selection in their installation software gets them ready for network installation without additional Compsurfing.

In addition to matching AUI, coax, twisted pair, fiber, etc., a Network Interface Card must support your network's protocol: Ethernet, Token Ring, Arcnet, or proprietary.

RESOURCES:

CompatiCard IV: $149
MicroSolutions
132 W. Lincoln Hwy.
DeKalb, IL 60115
(815)756-3411

ID340H-UC: $2531
ID340H-U: $2255
(without controller)
Priam Systems
1140 Ringwood Ct.
San Jose, CA 95131
(408)954-8680

Development of Priam products is continuing apace with the industry. The latest 5.08 software release supports DOS 5.0, mirroring, and duplexing. New drives come in sizes up to 1.5GB with a 2GB SCSI unit to debut at COMDEX. By year end, the company expects to be building integrated 2- and 4-drive subsystems with up to 8GB of fast SCSI storage.

OTHER NEWS

Intel has announced a new version of the i80486SX running at 25MHz (and a second at 16MHz). This is probably in response to the 40MHz 80386-compatible processors that have appeared, but it's still good news if you're in the market for a server.

NEXT MONTH

This concludes the basic server. The only remaining part that's required to complete this project is a keyboard. Believe it or not, there are some that make particularly good choices for a server. Next time, I'll conclude with a discussion of keyboards, and one or two other hardware goodies that can add a lot to a server. ■

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Thomas Conrad MC COAX STAR or TP STAR	258
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3COM 3C507 16-BIT ETHERLINK	289
3COM 3C523B 5PK Micro Channel	1,218
3COM 3C543 ETHERLINK/NB (MAC)	386
3COM 3C505 ETHERLINK PLUS 5 Pak	2,746
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SMC 3008 8-BIT COAX	144
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Thomas Conrad 16-BIT COAX	279
Tiara Lancard/E AT 16-BIT COAX	209
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Aquila 10BASE-T MC	160
SMC 3008TP 8-BIT Twisted Pair	188
SMC 16-BIT Twisted Pair MC	231
Tiara 10 BASE-T 8-BIT/16-BIT	193/210
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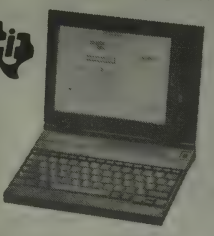

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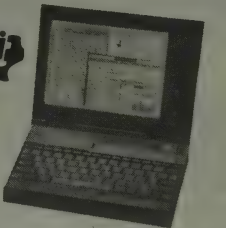

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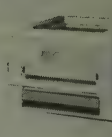

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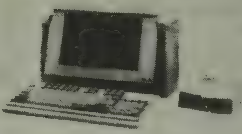

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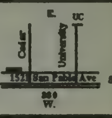

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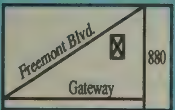

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Document Preparation In The UNIX World

Or, Is Troff Obsolete?

BY BENNETT FALK

UNIX

Perhaps a half-dozen bizarrely named utility programs come to mind whenever UNIX is discussed in polite society. Among these are nroff and troff, a pair of text formatting programs that were included as part of the original UNIX timesharing system in the early 1970s.

The two programs offer essentially the same formatting capabilities, differing chiefly with regard to the kinds of devices to which they send output. Nroff is used mostly for output to devices (such as terminals, line printers, etc.) with fixed-width character sets. Troff is used primarily to drive output devices that behave like typesetting machines.

Nroff and troff are, in turn, descendants of older formatting programs (RUNOFF, roff) developed nearly a decade before UNIX. The UNIX utilities still distributed today embody an approach to document preparation that is nearly 30 years old. The design of these programs so predates modern printing, display, and user interface technology that it would be nothing less than a miracle if troff were not obsolete. The manual page for troff only reinforces this notion:

> SYNOPSIS
> **troff** [**-abfiqtwz**] [**-mpackage**] [**-nN**] [**-opagelist**]
> [**-pN**] [**-raN**] [**-sN**] [**filenames**] ...
>
> *troff formats text in the filenames. For historical reasons, output goes to a CAT/4 phototypesetter attached to /dev/cat, but nobody uses a CAT/4 anymore. Ordinarily, postprocessing software converts output to a form that can be printed on newer typesetters or laser printers.*

In plain English, the original troff was written for a particular brand of typesetting hardware.

Throughout the last decade the business of creating interfaces from troff to modern printers and typesetters has spawned a robust industry and a host of new program names in the "roff" family. The emergence of PostScript as a standard language for display control vastly simplifies the business of interfacing troff to new equipment, but the problem still remains. On most contemporary systems, troff is invoked through a shell script that sets up the necessary filters for troff's output and directs the output to a print spooler of some sort.

Copyright © 1991 by Bennett Falk. All rights reserved. Bennett Falk lives in the Bay Area, writes when he can, and hopes for the best. He works for Sybase, but the opinions and attitudes expressed are his own.

NOBODY EVER CALLED TROFF USER-FRIENDLY

Quite apart from the issue of device support, nroff and troff don't offer much of a user interface.

Among contemporary computer users, nroff and troff (along with the table and equation formatting filters "tbl" and "eqn") are, more often than not, cited as evidence that UNIX utilities are inconvenient or hard to learn. Lately the criticism of these programs has also taken an environmental turn: "Use troff and kill a tree; use tbl and kill a forest."

The basic formula for using nroff and troff to format documents is to embed commands in the text to be formatted using any handy text editor. The commands are "dot" commands—a period as the first character of a line, followed by a one- or two-letter mnemonic and, optionally, some value. For example, the command

```
.bp
```

forces a page break. The command

```
.po .5i
```

sets the page offset to one-half inch. Other commands consist of "escape sequences" that can be embedded in the text. For example, the string \fB triggers a bold font, and \l'3.0i' can be used to draw a blank line three inches long.

In all, there are approximately 150 commands recognized by nroff and troff. A reasonably complete description of the formatting commands is included in the "NROFF/TROFF User's Manual" which is part of the supplementary documentation that accompanies UNIX systems.

More than anything else, formatting a document in troff is like programming. The iterations of editing, formatting, and proofreading make up a cycle of activity that should be familiar to anyone who writes software.

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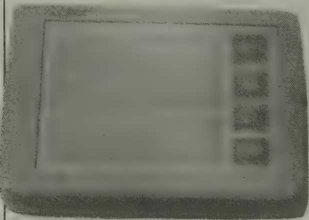

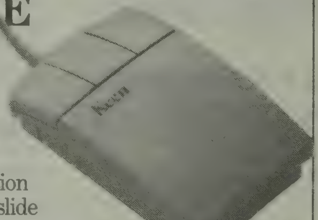

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The built-in formatting commands can also be combined into macros that enable the user to invoke relatively complicated formatting capabilities with relatively simple commands. Several standard macro packages are distributed as part of the nroff/troff package. (Standardized macro packages are invoked with a command line argument: "nroff -ms" loads the MS macros before processing any user-supplied text.)

Now the entire process is just as awkward as it sounds: First an editor must be used to enter text and embed formatting commands. Then the text is processed by the formatting program. Simple formats can be proofread on a terminal screen, but larger or more complicated jobs are best proofread from hard copy. Almost inevitably, proofreading will turn up some fault or inspire some change that will send the user through another cycle of editing, formatting, and proofreading.

The thoughtful reader will have recognized that this is precisely the sort of thing that interactive word processors were developed to avoid. An interactive word processor is supposed to display a reasonable facsimile of the formatted document as the text is entered. The what-you-see-is-what-you-get philosophy of word processing gives the user immediate feedback on formatting operations and undoubtedly saves paper and trees.

Unfortunately, the interactive word processor has historically been difficult to implement in UNIX environments because what you see (and what you get) are dependent on what you see them on. Nroff and troff may be clunky, but they are also ubiquitous.

Until the development of widely distributed, more or less standardized graphical user interface software, word processors were faced with the daunting task of trying to anticipate what kinds of printers and terminals would be used to display documents.

Once a standardized display environment was achieved, word processing software manufacturers could concentrate on features, and in the last few years, commercial software packages like FrameMaker have made sophisticated, interactive document preparation available to the UNIX audience.

SO WHAT GOOD IS IT?

Still, in spite of the availability of good quality interactive word processing tools for UNIX, nroff and troff endure.

They endure because even though we call them utilities and even though they do many of the same things that interactive word processing utilities do, nroff and troff are not utilities, but a language for document formatting.

More than anything else, formatting a document in troff is like programming. The iterations of editing, formatting, and proofreading described above make up a cycle of activity that should be familiar to anyone who writes software.

The notion that nroff and troff embody a document-formatting language is reinforced by the ease with which the developers of UNIX discussed text-formatting issues. The *Bell Technical Journal* for July/August, 1978, consisted of articles about UNIX by its developers. In this collection, Brian Kernighan, one of the authors of the C programming language, also co-authored an article on document preparation, in which troff is described as a

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"programmable text formatter."

Now it's fun to speculate about what Kernighan and his colleagues thought about troff, but the real point is that there are things that can be done with a language that can't be done with a higher-level utility.

Troff is in fact a fairly useful tool to provide access to formatting capabilities in unlikely places—for example, when the material to be formatted comes from some other program and is never typed in by a human operator.

For example, troff is an excellent tool for formatting information from a database that must be printed on a standard form. The typical high-level report generators that database software manufacturers provide will usually include controls for setting page dimensions and positioning data on a page. A diligent application developer can write a report that will fill in the boxes on a preprinted form. Exactly how this is done will change from one database package to another, and the report will have to be rewritten if the form changes.

Any well-constructed interactive word processor will usually allow the application developer to circumvent the formatting capabilities of the report generator. Typically, the word processor would be used to print the form and the data on blank paper. This is much more satisfactory than trying to hit the boxes on a pre-printed form, but because the word processor expects to be used interactively, there may be some problems in building an interface to it from the database manager. Typically the interface is patched together in a shell script that massages database output and templates from the word processor into something that the word processor can send to the printer.

Using troff to print the integrated form and data is almost certainly more to the point. The program that returns information from the database is constructed to intersperse the appropriate formatting commands for troff among the data. The output of the program executing the query is piped directly to troff (or to its filters for creating tables or equations), then queued up to be printed.

The main advantage of using troff in this way is that data selection and formatting are controlled by a single program that offers more versatile formatting capability than an off-the-shelf report generator can provide.

For all its liabilities, troff is not quite dead. ■

Simple formats can be proofread on a terminal screen, but larger or more complicated jobs are best proofread from hard copy. Almost inevitably, proofreading will turn up some fault or inspire some change that will send the user through another cycle of editing, formatting, and proofreading.

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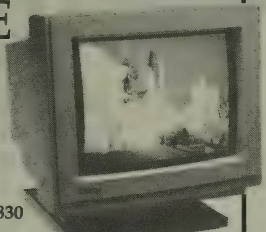

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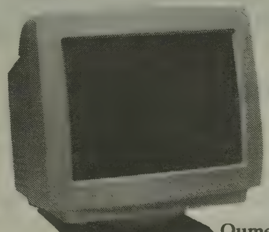

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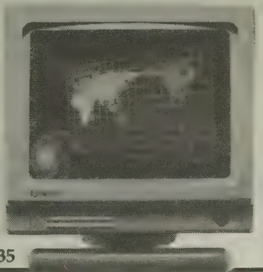

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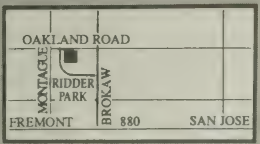

Panasonic's Business Partner 270

Moving Toward The Perfect Notebook

BY CRAIG MENEFEE

Notebook computers are, essentially, small business appliances. Your choice of the right machine for you will depend on what features you need. Still, some of these little computers seem to stand out from the rest.

The Panasonic Business Partner 270 in the unimpressive box has some neat features I haven't noticed on other notebooks. I've long been sold on paper-white, backlit, triple-twist LCD displays, but I've never seen one with letters as clear as the 270's. I'm not sure how they do it, though I suspect a 64-shade grayscale may have something to do with it.

Better yet, I've never seen a screen diffuse and eliminate reflected glare as effectively as this little Panasonic does. The anti-glare effectiveness was so noticeable that I tried using the machine in a chair with a bright window directly behind it. I didn't actually expect to be able to use the machine under such awful lighting conditions, but the Panasonic wasn't even fazed. The bright rear source of glare couldn't be missed, but even then, everything on screen stayed completely readable. Try *that* trick on some of the other notebooks!

OTHER FEATURES

The 270 stands out in other respects, too. I like a machine that boots quickly, and the 270 does that pretty well—but you never have to reboot at all, unless something hangs the machine. When you press the power-off button, the machine saves your entire current setup. When you turn it back on, what appears onscreen is exactly what was there at power-off, even if you were in the middle of an application program. (In my case, it means I don't have to reload QEdit to see my typing errors.) I can't bring myself to trust this feature completely; I still save all my work before I turn off the machine. But it still boggles my mind when I see the screen come up with my current project already loaded.

The Business Partner 270 keyboard has a fine, crisp feel, nothing like the "spongy" feeling that annoys me about some other notebooks. The keys have just enough "snap" to let me touch-type accurately, but there's no loud, mechanical click to wake up my wife or the person one seat over on the plane. The layout is great, with individual cursor movement keys and function keys that don't make you press a "Fn-m" or something to carry out basic screen control functions. The Caps-Lock and Control keys are reversed, to my way of thinking, but dozens of different utility programs exist to take care of that annoyance.

The 3.5" drive is for high-density, 1.44MB diskettes, which ought to be standard for notebook computers. Unfortunately, it isn't, but I'm glad Panasonic got it right.

The 270 has a really solid feel to it. I don't get nervous when I handle it, despite its light weight. It simply doesn't *feel* like it wants to fall apart if you drop it accidentally, or if the baby climbs on top of it. The same high construction quality shows up in the battery, which is a light, small unit that snaps in cleanly, solidly—and *easily*—at the back of the machine.

Another great touch—the 270's AC power converter is the smallest and lightest I've seen on one of these machines. You can't say a notebook computer is really a 6lb. machine when the transformer you lug around with it weighs 10lbs. The 270's transformer is more like one you might see with a boom-box. True, its horizontal design takes up three outlets on a power strip, but a short extension cord will take care of that.

WISH LIST FOR THE PERFECT NOTEBOOK

One thing I learned from the Panasonic is that if the major consumer electronics manufacturers put the same kind of effort into PCs that they do into microwave ovens and TV sets, there may be a clear winner in the "best notebook" division before too much longer. Here's where the "try this feature, borrow that" appliance approach may result in a Generation II Business Partner 270 that gets it a bit closer to perfect.

The biggest single improvement would be built-in firmware for DOS, or (better yet) for large, standard applications. This is a feature that NEC got right in the original UltraLite, but later they dropped it. The original UltraLite used credit card-sized, plug-in firmware to run large application programs like WordPerfect and Lotus Agenda. This feature made it possible to run these huge programs outside of main memory, and saved lots of storage space to boot. When NEC added a much-needed hard disk, their firmware ports became only a fond

When you press the power-off button, the machine saves your entire current setup. When you turn it back on, what appears onscreen is exactly what was there at power-off, even if you were in the middle of an application program.

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You can't say a notebook computer is really a 6lb. machine when the transformer you lug around with it weighs 10lbs. The 270's transformer is more like one you might see with a boombox.

memory. I sure wish they could add new stuff without dropping something in the process.

Maybe software changes make application firmware programs ultimately impractical, though it beats me why updates from the vendor wouldn't be possible on an EPROM card. But it would be nice if users didn't need to waste so much disk space on the standard DOS utilities. The Panasonic's 20MB standard hard disk is plenty for the sort of notebook computing I do, but storage space and memory are always at a premium. Putting DOS into firmware would effectively add plenty of both memory and storage space, and would take the machine up another notch in the quality sweepstakes.

The battery has a standard 2-1/2-hour real-world service cycle—not enough to get from coast to coast on an airplane. One day they'll invent a perfect, lightweight, 8-hour battery and the whole laptop scene will change. Some such batteries exist now, but they take longer to charge and aren't as reliable as their shorter-lived counterparts. In the meantime, if you get this machine, be sure to get an extra battery or two, and make sure they're fully charged before you leave for a long trip.

The 3.5" diskette drive is located on the side of the machine, and some users prefer it on the front. On an airplane, pulling diskettes out of a slot on the side can lead to embarrassment (or worse) when you accidentally knock your seat mate's coffee into his or her lap. But that's a "what if" sort of criticism; I've never personally had any problem with side-loading diskettes.

Other things I'd like to see:

•A VGA-level triple-twist LCD display with CGA operating mode (so you wouldn't have to switch between machines in order to get overhead projector compatibility).

•Weight at or below 4lbs., not counting power supplies or add-on features.

•A power supply that is small, light, and easy to carry, and that only takes a single outlet on a power strip.

If a manufacturer comes out with a notebook with all those features, I'll buy one and take my almost-perfect ones to the swap meet. (For more information on the Panasonic BP 270, contact your local Panasonic dealer.) ■

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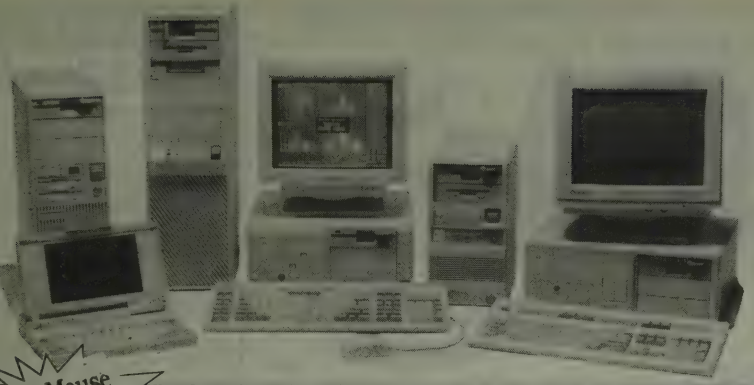

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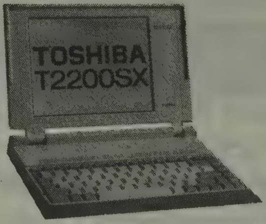

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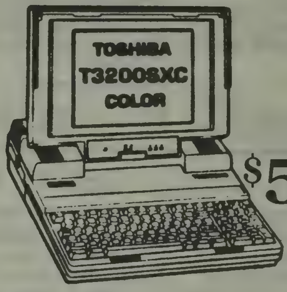

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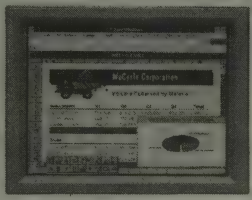

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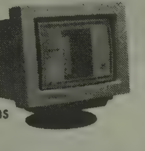

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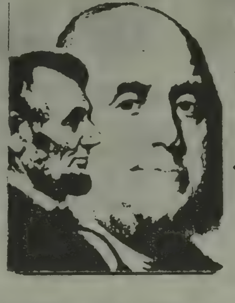

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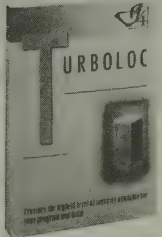

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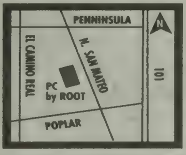

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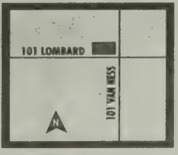

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The End Of Publishing As We Know It?

Digital Media *Editor Denise Caruso On Communication Tools, Intellectual Property, And Why The "Books" Of The Future May Come From Microsoft. Or Nintendo. Or Pacific Bell.*

By Mary Eisenhart • Photos: Susana Millman

"Everything is becoming digital, and we're trying to track as much of that as we can," says Denise Caruso of *Digital Media*, the monthly newsletter she edits for Seybold Publications. Seybold's seminars and trade shows helped propel the desktop publishing revolution in the last decade; now that "multimedia" has become the cliché of the '90s, the Malibu-based organization is heavily involved in promoting (and, for the benefit of baffled would-be users, explaining) the new technologies that are driving the concept of publication far beyond its traditional domain of text.

This turns out to be no mean feat, in a world of conflicting platforms (CD-ROM, CD-I, CDTV, etc.), warring vendors (will Apple set the standard with QuickTime, or will Microsoft's Multimedia PC technology capture the market, or will Nintendo be the big winner?), a plethora of little-understood technology, a lot of hype—and a host of companies from Time Warner to Sony to Pacific Bell quietly acquiring the rights to intellectual properties from Old Masters to Excellent Adventures. Nobody is quite sure when the multimedia revolution is going to hit, but they want to be in a good position when it does.

"I'm a little freaked out about it, frankly," laughs Caruso, "because I thought when I first started being interested in multimedia that I was getting into a niche market. It turns out to be a superset of the electronics business, so now I'm trying to cover the video industry, I'm trying to cover consumer electronics. Audio, computers. The computer people want to know what the video people are doing. The video people want to know what the consumer people are doing. It's hard to get that kind of information on any sort of pan-industry level unless you subscribe to all the trade magazines, and nobody can do that."

Not only that, everybody from struggling artists to megacorporations is grappling with new questions posed by emerging technologies. Who's going to pay for all this? What's going to make gawkers into customers? How, in a world of digitized (and therefore infinitely reproducible) information, do content producers retain the value of their intellectual properties?

The answer, of course, is that nobody really knows yet. But patterns are starting to emerge. So we decided to prepare for Seybold's latest publishing-expo extravaganza with a visit to Caruso's San Francisco office in search of information, digital or otherwise.

So, what's your definition of multimedia and what it's good for?

It's a series of enabling technologies. What they enable at this point, I think, is a different kind of communication, a multisensory kind of communication. It's not necessarily computer-driven, it's not necessarily consumer-electronics-driven.

What we have now is a whole lot of different media types that can be digitized and combined in ways that they could never really be combined before. The computers are powerful enough now, the digital signal processors are powerful enough now, and there's enough stuff out there, that people can actually think about putting these things together in a meaningful way.

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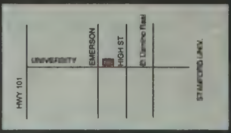

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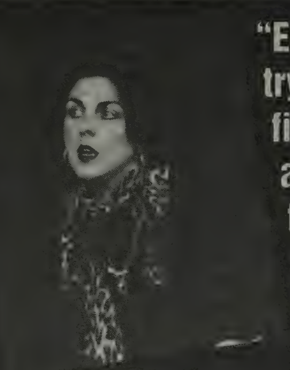
One of the reasons that multimedia is very slow to catch on at this point, I think, is that it's really hard for people to get their heads around what they can do with it, what makes it different. What's hard about an article like this is that people are going to be reading more words about multimedia, but when you see a good multimedia product, you immediately just totally grok what it can do.

One thing I really like is the ability to send video over a network, and to use multimedia in electronic mail. I don't think that every person in the world is going to want to get a talking head popped up when they click on their email—I don't think that's necessary—but there are a lot of really good uses for sending pictures and voice around on a network in an easy way.



"Everybody's trying to figure out a way that they can cover the board here. I think that the war is not just between computers and consumer electronics—everyone is warring for the consumer's attention."

For example?

Well, let's just say that you work for a national real estate company. The big thing in real estate companies now is going out and shooting videos of homes, doing a walkthrough. It will be very easy, when we have the bandwidth over the phone lines, to just broadcast some video about this house instead of having to copy that video and send it around to other offices. Somebody can get it on their local machine, then they've got it. They can save it, do whatever they want with it. It speeds up the process of getting business done. I think that that's where we're going to see the first big gains in productivity in personal computers.

What's happened before with personal computers up to this point is that they've helped us all do our jobs faster. But what I do with a word processing memo, is I just font it to death. It takes as much time as it would have if you'd had a Selectric on your desk and had to bang the thing out and slap a little Liquid Paper on it. You don't really gain a lot of productivity.

The productivity really is in helping people communicate with each other better and faster and in a more efficient way. John Seely Brown at Xerox PARC talks about this a lot in terms of compound documents. He says that what we do now with paper is just drain all the life out of our communication and reduce it to this piece of paper with print on it. When you add the water of multimedia to a document like that, you enable lots of richness and communication in different forms, so that maybe people who don't respond as well to print as they would to pictures will get what you're talking about faster. They won't have to call you and say, "What do you mean by this?" If you're using a voice message to annotate a spreadsheet, you give people the ability to understand more quickly and in a richer way what it is you're actually talking about.

I saw this great NeXT demo in Japan—the interoffice memo was written in WriteNow in English, because that's what was available, but the voice message that went with it was in Japanese.

That's great! Well, there you go. I see lots of those kinds of uses in the business world.

Entertainment and education are another two areas that I think are going to be really important. Education because, let's face it, like it or not, kids aren't reading today. The language of visual media, the whole concept of media literacy, provides more of a cornucopia for kids to choose from, what kinds of things communicate with them the most strongly, and what they respond to the best. I don't necessarily think that multimedia—interactive video disks or interactive CD-ROMs—is necessarily going to aid literacy per se, but I think from what I've seen it draws kids in more, into a subject.

ABC News Interactive is a great example. Think about the incredible archives of historical information that they have, that's sitting in a vault somewhere, and people have to pay some exorbitant amount of money at the moment to even license a minute of it. They're putting this stuff onto interactive videodisk, doing value-added with Ted Koppel talking over it, and lots of textual stuff and resources and a way for teachers to be able to make lesson plans and help kids to make presentations—using this one product. It's really exciting. It's a way that really draws kids into the immediacy of what's going on.

And Voyager's stuff is just phenomenal—Bob Stein has managed to find a way to sort of put genius in a bottle. [UCLA professor] Robert Winter comes through so strongly on those classical music disks.

It's that concept that Jonathan Seybold was talking about at Digital World [Seybold's multimedia conference held in Beverly Hills last June]—it's not a book, it's not a movie. It's something more. It's greater than the sum of its parts in the visceral effect. It hits you right brain/left brain, and you get a lot of different stuff going on. It's really entertaining and really educational, and an exciting new way to show people things that they could never see before.

On the other hand, at Digital World you were saying that a lot of people hadn't seen anything yet to make them take out their wallets. Is this still valid?

Oh yeah. It's still valid. One of the reasons it's still valid is because, especially for the consumer players like CD-I and CDTV, the performance just isn't good enough. When you come from the computer world and look at stuff like this, it's harder to understand. But when you're a consumer, and you've got a remote in your hands, and you're going to control something—I'm used to pressing a button on a remote and something happens. *Right then.* I don't have to wait for disk access.

There's a game out for the Mac on CD-ROM called Spaceship Warlock. Everybody's oohing and aahing over it, and it is very pretty, and it's very interesting. But you click on the mouse button, and it takes *ten seconds.* Even five seconds—it doesn't sound like much, but when you've just punched somebody in the face or something... I know my computer's not broken, I look over at the little CD-ROM drive and I see that little light flashing on and off, and it's like, oh, *please!*

I don't have the patience for it. I won't wait.

It seems like consumer electronics and computers are converging on this area and in some ways warring with each other. What's going on with that?

There is definitely a convergence between consumer electronics and the computer business. I think the computer companies were kind of worried about it before, because they saw it as a way that they were going to get, once again, usurped by Japan, and they were not going to have a chance to compete. But I think what's happening now is that the computer companies are looking at ways that they can also create consumer players, that are computers in a box, essentially, but that can be used as consumer electronics devices.

Like CDTV?

Like CDTV, only CDTV is very slow. The Amiga's a good machine—it's kind of sad because the Amiga really started this whole multime-

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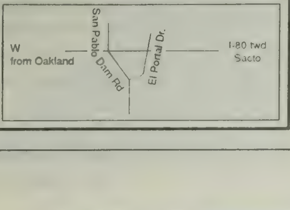

dia thing. I just don't think CDTV's going to work yet.

But it's interesting. Apple's got a consumer division now, and I'm sure they're not just working on titles, I'm sure they're working on hardware. IBM has said that it's investigating consumer technology. They haven't made any product commitments that I know of. Everybody's trying to figure out a way that they can cover the board here. I think that the war that there is is not just between computers and consumer electronics—*everyone* is warring for the consumer's attention.

Do you see any clear leaders or clear followers at this point?

No. Not yet. Certainly Apple has some fantastic technology, and QuickTime is really nice, but QuickTime's in alpha and CD-I is shipping this month. Apple's software's a really good thing, but you can't judge the end result by the tools, because there's lots of good tools out there and it just depends on what people come out with. A lot of people have said that titles, the actual things that come out on disk, are going to drive the business. I think that that's true in a number of different ways.

"The content world is really starting to take off. Microsoft is heavily invested in developing titles. There's a giant push at Apple right now to get people developing titles for the Mac. People who own large amounts of content are all looking at how they can segue their analog stuff, movies and music, into digital products that they can continue to resell."

Consumers will probably adapt to multimedia technology in the home in the game market first. And, if they've got computers already in the home and somebody can sell them a cheap CD-ROM drive—which seems to be dreaming the impossible dream at this point—if people already have a computer in their home, a color Macintosh or a color Windows PC, they're going to buy reference books. And probably some kids' books. Nobody's going to go out and buy a computer to do multimedia.

And then in the business world, there are going to be a lot of off-the-shelf training applications. Not so much customized things like "If you work at Boeing, here's how to fix this particular Boeing airplane," but more generalized how-to-do-certain-tasks kinds of disks. I think there will be lots of little vertical markets for either consumer- or computer-based players in business because of that.

It's so early right now, and nobody really knows how customers are going to react to these things. Everybody's just sort of on their knees every night praying that this catches on pretty soon.

So as a market opportunity, is the growth going to be more in tools or content?

Both at the same time. There's a lot of really good work going on in tools right now—Macromind's doing really good work in tools, Authorware's doing really good work in tools. The people who are doing tools for CD-I now, Philips included, are doing fabulous things that are cutting down the time of developing titles to exponentially less than it was taking at first.

The content world, the titles world, is really starting to take off. Microsoft is heavily invested in developing titles. Philips is heavily invested in developing titles. I know that there's a giant push at Apple right now to get people developing titles for the Mac. People like Time Warner, with Warner New Media, and Sony, with Sony Electronic Publishing—the people who own large amounts of content are all looking at how they can segue their analog stuff, movies and music, into digital products that they can continue to resell.

To what extent are people going to develop their own content?

There's two ways to think about the way multimedia shakes out. One is that you're going to go out like you do with CDs now, and buy a title and play it on your player, or play it on your Macintosh the way you do software. And the other part that people have gotten really excited about is the video editing and authoring tools that actually allow you to create multimedia presentations and things yourself.

I think that's probably where there's been the most progress made technologically, at the same time the market has grown the slowest. It's a lot like desktop publishing, where the early adopters of the technology, and the people who invested a lot in it, were people who were professionals. Printing and publishing professionals who wanted to do this stuff cheaper without having to use the multi-thousand-dollar big computers. That's what's happening with video too, with companies like Digital FX, and authoring systems like Authorware and Macromind Director.

What people are finding out is that it's a lot harder to do video than you think it is. There's a whole aesthetic to it that people don't understand going in the door. There's a whole lot of things people have to learn to be literate with video, and the companies are having a hard time right now. It's going to be a little while for them until enough people start to understand that they can do this kind of work at home.

The great white hope, of course, is that people are going to take all the stuff that they shot on their little camcorders and edit them into these wonderful films, or at least kind of fun, funky films. And I think that's a neat idea. I love that idea.

Did you see Abbe Don's "We Make Memories" [One of the technology exhibits at Digital World, it's an interactive family-history that uses Macintosh and LaserDisc hardware to tell the stories of several generations]?

Yes. It was wonderful. What a great idea. But Abbe is a professional. She has a degree in interactive communications. She knows how to do this stuff. She had to learn how to program HyperCard, she had to do a lot of stuff to know how to do that.

What's exciting to me is that there are people who are working on the tools that will make it modular to do something like that. You'll be able to take something like Abbe's project and just say, "Okay, I've got photos of my family, okay, put those here. Here's the video. Here's the sound." To make it easier for people like me to put together something in multimedia that is neat for me to show my friends, is neat for me to work with and play with. I think that's going to happen, but it's probably five years away.

"We Make Memories" is the first thing I've seen that would give my parents a compelling reason to buy a computer.

The Japanese have thought that for a long time, that the way to get video technology really entrenched in the home is to find a way to use it to record family stuff. That's universal. Almost everyone has a camera, from the poorest family to the most wealthy. Everybody has a way to record that stuff.

And then there's the Kodak picture disk...

See, the thing that's going to be great about that is that it's a great distribution medium. It's a great publishing medium for people. I just love that idea. It's exciting to me, because what do I do with my pictures now? I stick them in a box.

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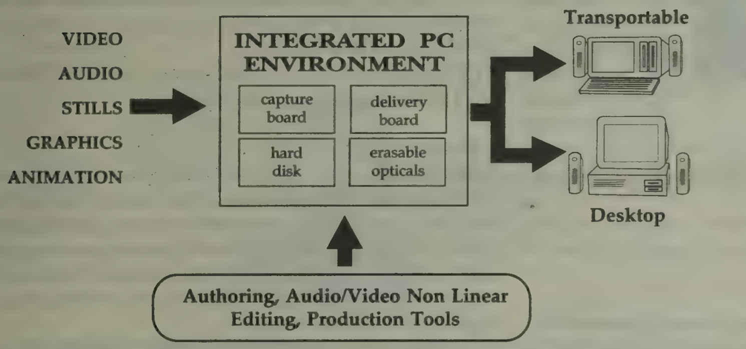
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bunch of these different disks, thumb through them and talk. They're on a disk so if you want to load them up into "We Make Memories," you just read them in. That's what I find really interesting, that people like Abbe want to commercialize that. They want to find a way to make that into a template.

What does this mean for publishing as we know it?

I think publishing as we know it is about to undergo a radical change. Have you seen the Verbum Interactive Disk? It's a CD-ROM-based magazine, and it's cool. I don't think that paper is going to be usurped; the Verbum Interactive Magazine is not a book, not a movie, not a magazine, and not a video. It's better. It uses visuals for the things that visuals are required for, it has this little jukebox where you can listen to some cuts from CDs of your favorite groovy artists, and it has text if you need to look at text. It's really well done. It shows me that there are a lot of creative, imaginative people out there who are looking for new ways to distribute information.

The other thing is that we in this society, and probably in the world, have gotten away with having our information subsidized for a very long time by advertising. If you were to pay what it cost to produce a newspaper every day, you would not be paying 35 cents, or even 50 cents, for it. We've become accustomed to that, and as our economy goes through this settling period where a lot of stuff's falling by the wayside and we're really not very strong economically, advertisers are increasingly not going into print.

"Information does want to be free. That's okay. I have a tendency to believe that. Except that I really get surly with people who make Xeroxes of my newsletter. I mean, everybody wants information to be free until it's their information."

One of the things that I see people talking about a fair bit is that they're getting companies to subsidize the creation of disks. So there's a different way of advertising.

Like a Marlboro logo on the bottom corner of the screen?

Along those lines. I actually know of a project—say you wanted to do an interactive CD-ROM on pregnancy, that you wanted to put into a doctor's office. Well, what pharmaceutical company do you know of that wouldn't want every expectant mother in the universe seeing their video? They can do it very tastefully—of course they probably *won't* do it very tastefully, but they can—with the logo. Squibb, or whoever the pharmaceutical company is—"Squibb Presents *Pregnancy."* And then end with fadeout to their name. That's good stuff. It doesn't have to be as in-your-face as Prodigy.

The truth is that there's going to be a fundamental shift in the way we acquire and pay for the information that we get. That's going to be really poignant with multimedia, because this stuff is not cheap to produce. I'm doing a story right now for the newsletter on content producers, and the number I'm getting most frequently is $300,000 to produce a CD-ROM disk. That's a lot of money.

So does that mean that little players are squeezed out of this market from the beginning?

No, actually, that's not true, because as is true in the rest of the software universe, the little players are the ones who are really doing the exciting, creative work.

So how do they get funded?

It's interesting. Some of them are doing consulting on the side to finance the project.

I noticed a lot of the people who attended Digital World were consultants and producers.

Which is actually kind of a neat thing at this point in the business, because so many publishers don't really understand all this and they don't know what they're getting into. To have someone who has some expertise be able to talk to you about players, and talk to you about what people want, is really very valuable.

So some of them are consulting, some of them have other jobs on the side, some of them have venture capital. Companies like Voyager say that they don't even try to make a profit, they just try to break even. They're very, very smart about how they put their products together, they make them as inexpensively and high-quality as possible, and they don't expect the moon. And they don't use venture capital.

Any possible way you could imagine people using to get these things financed, they're doing it. They're doing it however they can.

In view of the overturning of Judge Greene's ruling, do you see the phone companies getting involved in all this?

Oh yeah. It's questionable at this point how exactly they'll get involved in it.

GTE down in Southern California has a whole multimedia division called ImagaTrek. They don't actually sell their products; they're not one of the Regional Bell Operating Companies, but they are under some restrictions. So they sell their stuff out to someone else who publishes it, but they're doing really interesting work. And everything they do, they keep in mind that it may be going out over the phone lines. They work closely with the Cerritos project down there, and they've definitely got their eye on electronic distribution.

Pacific Bell has a project called LiberNet in the labs right now, that's an online multimedia library. Pac Bell's got lots of very interesting stuff going on in their labs.

I personally am very opposed to the Bell Operating Companies being in the information services business.

For what reason?

Because I believe very strongly that in a democracy it's very important that not any one organization, entity, company, or institution have control over both the conduit and the content. It's always made me angry that the phone companies have insisted that they will not push to get fiber optics installed into the home until they have the right to sell information services, because they say that's what's going to pay to put fiber into the home.

I think that's just—incorrect. [*laughs*] Right now, the fastest that they've tested fiber optics is 40 gigabits a second. *Uncompressed* HDTV is like 100 megabits a second. Megabits. You try and tell me that the phone company can't make money renting out those lines.

I just don't think that it's the right thing to let them get into the information services business. I think they have plenty of ways to pull in massive amounts of revenue. I think if we're going to say that the phone companies can't sell information services, then we ought to look at the cable companies, since the cable companies provide conduit also, and find some way to regulate them. And the satellite companies too. We really need to rethink the entire issue.

What do you see as the problem of having the same person providing conduit and content?

Continued on page 250

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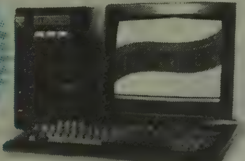

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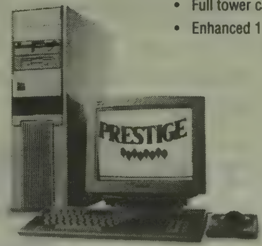

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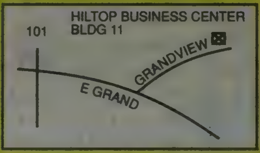

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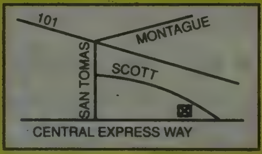

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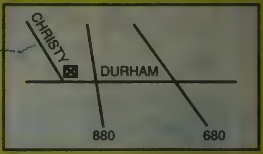

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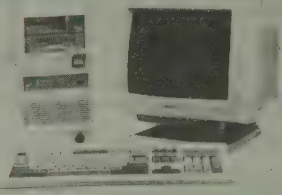

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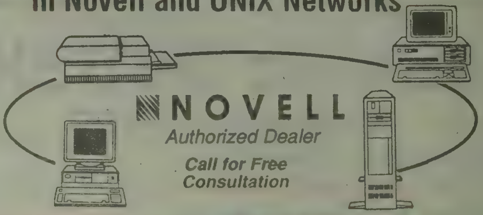

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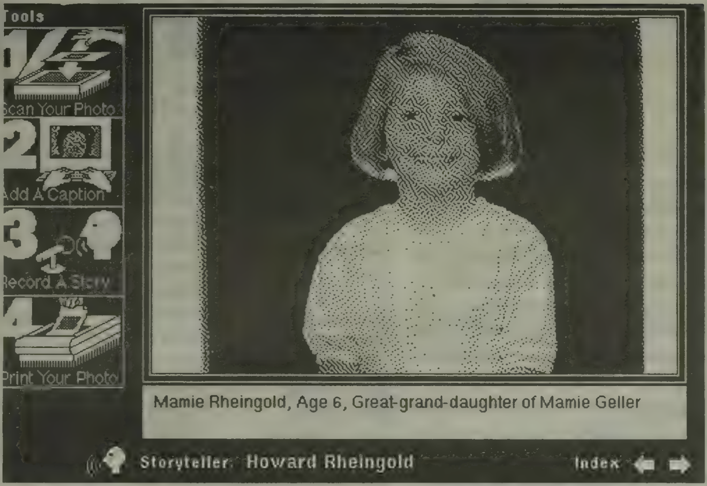

Mamie Rheingold, Age 6, Great-grand-daughter of Mamie Geller

Storyteller: Howard Rheingold

A HyperCard-based package, Share With Me A Story allows users to scan photos, add voice commentary, and create interactive presentations.

My parents often ask me if they need a computer, and until recently, fond as I am of my Macintosh, I've been unable to give them a good reason to go out and buy one.

Then I saw We Make Memories, as good a reason as I've ever seen for a Mac in every home, or at least any home that's into family history and masses of photos and home movies for posterity.

Abbe Don grew up listening to her great-grandmother's stories of life in the old country (Lithuania), the depredations of the Cossacks, coming to America, and the characters she met along the way. Her great-grandmother, Annie Shapiro, is gone now, but her stories live on, in her own voice, on her great-granddaughter's interactive video, We Make Memories.

We Make Memories uses HyperCard, a Mac II, and a laserdisc to access video clips, still photos, and spoken stories from four generations of women in Don's family, including Don herself. Click on the onscreen photo of Don, her mother, her grandmother, or great-grandmother, and you'll hear about the trip across the Atlantic, or going to school in turn-of-the-century New York, or some recent family event.

At Digital World, I spent nearly an hour with We Make Memories, thinking of the wall of photos in my family's house, and all those tapes my father recorded of my grandparents, telling of farm life in Wisconsin in the last century, and the Indians in Wyoming, and the tragic romance of my grandmother's uncle. And all those home movies of my mother's family in the '20s, with her brother I never knew because he died young, and my aunts and uncles as children opening Christmas presents befitting Hollywood at the time. And how I wanted to put them into something like We Make Memories, so the grandchildren of my nephews and nieces have more than just names to know their ancestors by.

Apparently I'm not alone, and those of us itching to get our hands on the technology to create similar projects may not have to wait too long. Abbe Don is working on a new project, Share With Me A Story, which allows users to scan in their own photos, create captions, and, using MacRecorder, append oral commentary to it. They can also print Share With Me A Story pictures on a LaserWriter.

Share With Me A Story is still under development; Don plans to add sophisticated indexing capabilities for custom slide shows—multi-generational First Day of School, for instance, or Mother's Day pictures. And after that, who knows?

Abbe Don will be exhibiting both projects (and allowing visitors to scan their own photos and tell their own stories) at TAPE 1 at Dominican College in San Rafael, October 15–18. For information on TAPE 1, call (415)485-3255. For further information about We Make Memories or Share With Me A Story, you can contact Abbe Don by electronic mail (Internet) at abbe@well.sf.ca.us or by phone at In Context, (415)567-8130. ■

We Make Memories is interactive, multimedia family history.

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With the media explosion has come an urgent need to fully understand and master these new publishing options. Coming this October, Seybold Seminars gathers the people, issues, products, and experience into a “must attend,” once-a-year meeting for everyone concerned with creative communications, with a variety of programs directed at individual needs.

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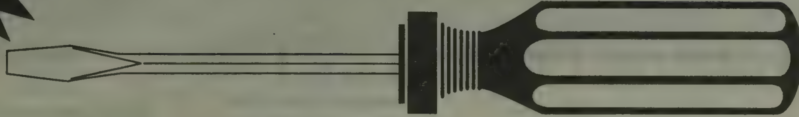

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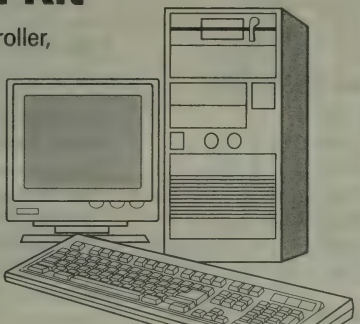

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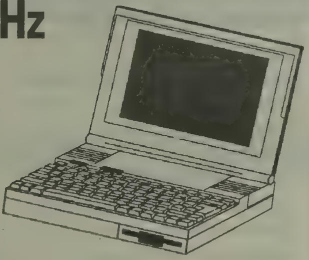

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Seybold Conference Schedule

Tuesday, October 1

9:00–10:45

The Evolving Process Of Communication

Moderator: Jonathan Seybold

Wolfgang Kummer, Linotype-Hell
Terry Westmacott, Inform
Paul Brainerd, Aldus

11:15–1:00

New Technologies & New Directions

Moderator: Jonathan Seybold

John Sculley, Apple Computer
John Warnock, Adobe Systems
Vern Raburn, Slate

2:30–4:00

PostScript Level 2/ Performance

Moderator: Jonathan Seybold

Richard Patterson, Hyphen
Fred Schwedner, Adobe Systems
Byron Weston, Phoenix Technologies
Michael Hopwood, Apple Computer

Operating Systems Wars

Moderator: Craig Cline

Roy Clausen, IBM
Charlie Oppenheimer, Apple Computer
Bradley Koltz, Essex County Newspapers
Tim Gill, Quark
Other panelists TBA

4:30–6:00

New Imaging Technologies

Moderator: Jonathan Seybold

Tim Justice, Sony
Alvy Ray Smith, Pixar
Adriaan Lichtenberg, Storm Technology

Lego Software, Lego Documents

Moderator: Craig Cline

Pam Deziel, Apple Computer
Tony Williams, Microsoft
Bob Travis, Digital Equipment Corporation

Wednesday, October 2

8:30–10:00

Color Management Systems & Calibration

Moderator: Jonathan Seybold

Mike Templeman, Aldus
Jacob Aizikowitz, EFI
Candice Eagle, Eastman Kodak
John Stewart, Barneyscan
Jim King, Adobe Systems

Workgroup Publishing Systems I: Writing & Editing To Fit The Layout

Moderator: Craig Cline

Tim Gill, Quark
Steve Adams, Admation
Jonathan Jacobs, Madison Technologies

Electronic Publishing: Is Print Dead?

Moderator: David Baron

Mark Dillon, GTE
Cathleen Asch, Truevision
Other panelists TBA

1:30–3:00

Latest Developments In Font Technology

Moderator: Jonathan Seybold

Cynthia Hollandsworth, Agfa Compugraphic
John Kunze, Adobe Systems
Dennis Adler, Microsoft
Allan Haley, International Typeface Corporation

Desktop Color: User Experiences

Moderator: Caren Eliezer

Allan Marshall, Harmsworth Quays
Ben Verhejden, Baxem
Grant Hall, American Color

Alternatives For Color Scanning & Output

Moderator: Pete Dyson

Miles Southworth, Graphic Arts Publishing
Eberhard Schubert, Linotype-Hell

3:30–5:00

Quality Output On Plain Paper

Moderator: Jonathan Seybold

Rob Cook, Lightsource
David Spencer, Spencer & Associates
Other panelists TBA

The Beleaguered Trade Shop

Moderator: Caren Eliezer

Cesare Del Vaglio, McGraw-Hill
Steve Server, AGT
David Buell, Advanced Laser Graphics
Other panelists TBA

New Approaches To Documentation

Moderator: Mark Walter

Richard Sands, Sun Microsystems
Warren Walker, Eastman Kodak
Other panelists TBA

7:00–9:00

Font Free-For-All, 5th Edition

Moderator: Cynthia Hollandsworth, Agfa

Kathleen Tinkel
Mark Solsburg, FontHaus
Mark Batty, ITC
René Kerfante, Monotype
Kevin Wandryk, Adobe Systems
Dennis Adler, Microsoft
David Berlow, The Font Bureau

Thursday, October 3

8:30–10:00

Desktop To High-End Color Shootout

Moderators: Jonathan Seybold & Caren Eliezer

Miles Southworth, Graphic Arts Publishing
Sanjay Sakhuja, Digital Pre-Press International
Bill Givens, ECRM
Steve Jewett, CGI
Larry Clay, M&T Publishing

Workgroup Publishing Systems II: File Management & Copy Flow

Moderator: Craig Cline

Gérard Lelièvre-Laferté, P.INK
Alan Darling, Quad/Graphics
Terry Materese, TV Guide

Multimedia Publishing

Moderator: David Baron

Peter Bloch, Interactive Arts
Other panelists TBA

10:30–12:00

Desktop Publishing In 1995

Moderator: Jonathan Seybold

Tim Gill, Quark
Paul Brainerd, Aldus
Larry Jordan, Ventura Software
Garrett Queen, TAB
Sharon Schanzer, Madison Technology

Corporate Publishing In 1995

Moderator: Mark Walter

Dave Boucher, Interleaf
David Murray, Frame
Dennis Andrews, Xerox
Patty Seybold, PSOCG
Dwight Stuckey, AT&T

2:00–3:30

Closing Session: Tell The Vendors

Moderator: Jonathan Seybold

Keith Fox, Apple Computer
Steve Shaiman, Microsoft
Chuck Geschke, Adobe Systems
David Dinin, Linotype-Hell
TBA, Scitex

4:00–5:30

Staying Afloat In The Output Service Center Business

Moderator: Caren Eliezer

Theresa Savitch, AGT
Alan Darling, Quad/Graphics
Mark Welch, Scitex
Mike Bissett, Pendell Printing
Jack Butler, Butler Graphics

Color Screening: Real World Tests

Moderator: George Alexander

Paul Beyer, JCH Color

CD-ROM Publishing

Moderator: David Baron

David Wilcox, Dataware

New Printing Technologies

Moderator: Jonathan Seybold

Jerry Kelly & Brian Buda, DEC
Bill Palofax, Polychrome

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- EMS-LIM 4.0 on Board
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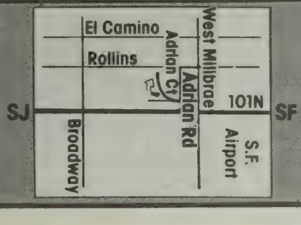

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Learning And Training

BY MIKE MARKOWITZ

The booming market for all sorts of computer training stuff indicates two things:

1. Hardware and software are still much too difficult, and

2. People and corporations are still very insecure about their ability to master these new technologies.

For the new PC user, there is a vast array of books, courses, seminars, video tapes, audio tapes, and computer-based training packages, all promising a painless and entertaining path to advanced cosmic levels of Power Userhood.

In an ideal universe, every new software package would come with complete documentation and professionally designed tutorials to help new users over the rough spots.

Shrinking profit margins in the software industry ensure that documentation standards will continue to sink from their present low level. The industry standard seems to be that if the product ships within a year of the promised date and contains no bugs that inadvertently reformat your hard drive, then you got your money's worth.

All too often, what's in the book doesn't match what's in the product. Manuals often waste chapter after chapter on obvious or trivial information, while vital tips and procedures are missing, or buried in an obscure appendix. Some cynics think the market for computer books exists to provide documentation for pirated software, but there is a real demand for clear, readable, user-oriented documentation that the buyer couldn't find inside the shrink-wrap. (See last month's installment on books for the beginner.)

You should understand that the typical "technical writer" knows little about technology. In most high-tech industries, writers are regarded as people who bother programmers and engineers who are trying to work. The writer is often directed to "go out there and get the information," like a good investigative journalist, but programmers and engineers live in a very different culture—they hate to release information until everything is complete, tested, checked, and approved. There's an old joke that "real programmers don't document their code—if it was hard to write, it should be hard to read."

Manuals are often based on early beta-test software or prototype hardware. Quality assurance often amounts to little more than proofreading. There is rarely time or budget for realistic validation ("Validating" documentation means sitting down with the product, and actually working through each procedure, to ensure that the book matches reality.) For anything other than a word processor, realistic validation of a manual may require skills that a writer lacks—for example, a sophisticated 3D CAD program, or a statistical analysis package.

The problem is not just that writers are overworked and underpaid (although they are). The problem is that the people who make decisions in hardware and software companies have forgotten, or repressed, the feelings of anxiety that new users experience. Computer documentation is written for people who are comfortable with technology, curious about exploring new things, and willing to fill in the gaps from a rich store of troubleshooting experience.

The brightest spot in this picture is the increasing quality and standardization of Online Help (usually accessed by pressing F1 in MS-DOS programs and Command-question mark on the Mac.) When I show new users how to use Online Help, I am constantly amazed at how quickly they become self-sufficient learners. The vast Online Help system in Microsoft Windows is a model of good design that other publishers should emulate.

COURSES

About a third of the learners in any computer training class experience moderate to severe anxiety. Instructors have difficulty understanding these feelings, since the typical instructor has always been comfortable in a computer environment, even if the software is user-hostile and the hardware is unreliable.

Anxiety takes different forms in different people. An anxious learner will make the same error repeatedly, usually without thinking about what is happening, or trying to pause, relax, and understand the problem.

The anxious learner may seem paralyzed—unable to decide what to do next, or afraid to do anything. He may be overwhelmed by the sheer number of options and alternatives the system offers.

Anxious learners may be so desperate to remember and apply everything that they will forget to consult available documentation or use Online Help.

Shrinking profit margins in the software industry ensure that documentation standards will continue to sink from their present low level. The industry standard seems to be that if the product ships within a year of the promised date and contains no bugs that inadvertently reformat your hard drive, you got your money's worth.

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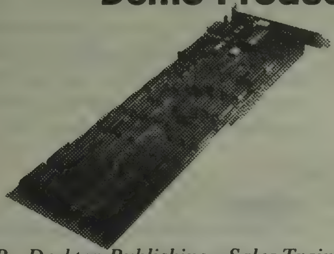

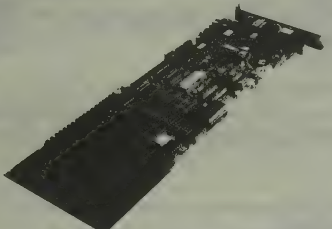

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The ProColor image processing system is an integral part of any visual processing system. A professional real-time (1/30 sec.) video capture and imaging system capable of capturing video images in up to 65,536 colors and displaying them on a VGA monitor in 256 colors at 640X480 resolution. The ProColor accepts NTSC, RGB and S-Video input and saves in TIFF, PCX, CUT or TARGA file formats. Each ProColor is provided with Aitech CEdit image editing software. A C-callable software development library is also available.

The Aitech ProVGA/TV

The ProVGA-TV system connects to any VGA card with a feature connector to convert VGA display graphics into NTSC or S-VHS video for display on TV monitors. The converted video can also be genlocked to external input NTSC or S-VHS video signals for multi-image video presentations. The genlock capability allows you to mix, overlay, or chroma key the VGA signal with the input video signal.
Each ProVGA-TV is provided with Aitech VTN control software.

Time: October 9, 6:40 PM Wednesday &
October 12, 10:40 AM Saturday

Snacks and refreshments will be served.

Place: 830 Hillview Court, Suite 145,
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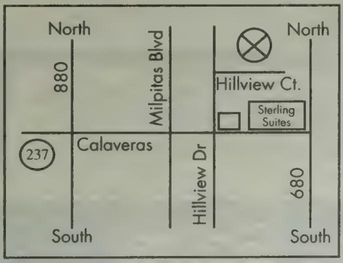

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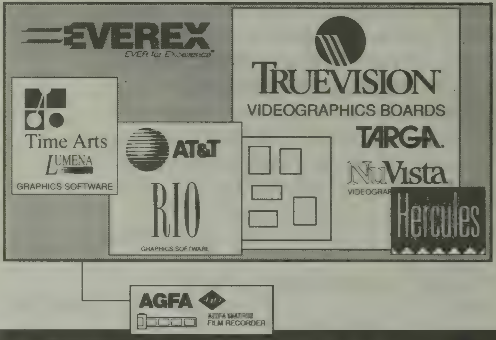

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The anxious learner may work with exaggerated caution, for fear the system will bomb out and destroy her work if she makes one false move.

Anxious learners may express anger at the computer, the instructor, and the class. Passive resistance ("I dare you to try to teach me anything") may also be a sign of anxiety.

Most instructors are enthusiastic about the technology, and may feel that there is something wrong with any learner who does not immediately share those feelings. Since Macintosh has been promoted for years as an easy, friendly, intuitive system, a learner who does not catch on immediately may begin to feel helpless and dumb.

Community colleges and adult education programs frequently offer short courses in personal computing, word processing and various computer applications. The price is right, but classes may be crowded. Before signing up for such a course you should be sure that the curriculum and available equipment correspond to your needs. Given the realities of school budgets, hardware and software are rarely the latest, although the instructors may be excellent.

The big computer chains and superstores have also discovered that training can be a profit center as well as a hook to clinch a sale. This can be a good way to get training on the latest hardware and software.

Commercial computer training outfits are geared more toward the needs (and budgets) of corporate clients than individuals. MacAcademy stands out as an exception—I've never heard anything but rave reviews about their Macintosh training classes.

VIDEOS

Instructional video seems like a great idea—over 90% of the households with computers also have a VCR. Unfortunately, good instructional video is extremely hard to design, produce and deliver. Simply pointing a video camera at a computer screen usually results in a fuzzy flickering picture that may not clearly communicate what a user needs to do to accomplish a task.

MAGAZINES

Advertisers know that corporate users and hard-core computer hobbyists spend the most on hardware and software, so most publications aim their editorial content at these audiences. In the Macintosh world, *MacUser* often contains articles of interest to beginners, while *MacWorld* is more oriented toward power users and professionals. On the PC side, *PC Novice* stands out as the only magazine aimed specifically at beginners.

COMPUTER-BASED TRAINING

Computer-based training for beginners is something of a paradox—since it presupposes the learner has already progressed enough to be comfortable with the computer. Individual Software Inc. (ISI) produces a line of excellent training packages for popular MS-DOS and Mac applications, such as WordPerfect, Microsoft Word, Lotus 1-2-3 and Excel. The training package for PageMaker on the Mac is designed to run under MultiFinder alongside the actual program, so the learner can immediately practice each lesson. ISI's elementary Macintosh tutorial, "Professor Mac," was a little too cute for my taste—the HyperCard-based tutorial that Apple includes free with every Mac is all that most beginners really need to get started. ■

RESOURCES:

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Bay Area Computer Exchange Inc. invites you to join us to celebrate our

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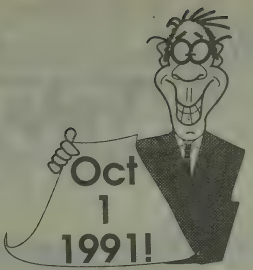

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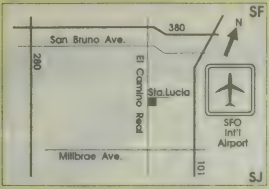

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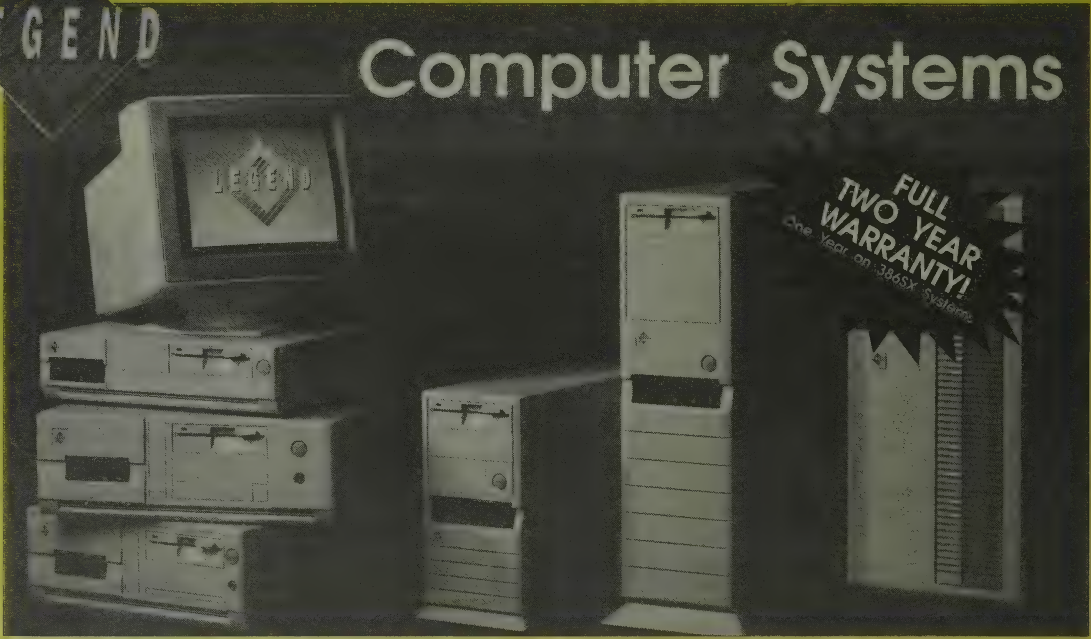
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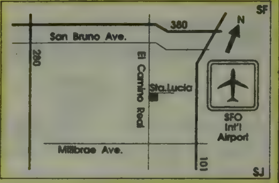
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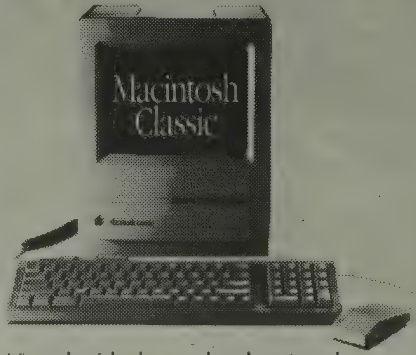

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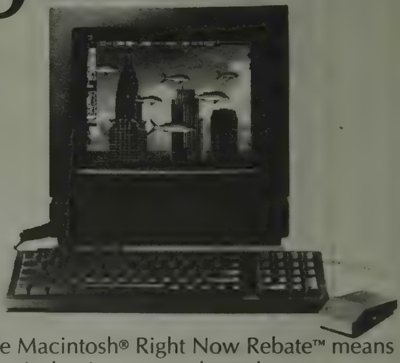

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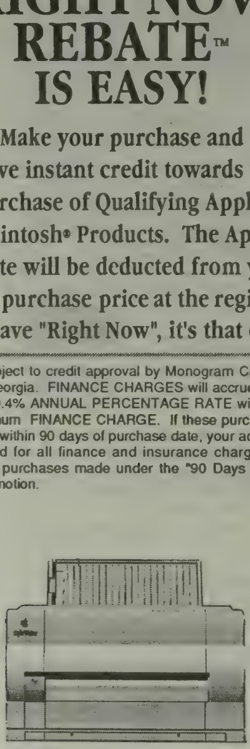

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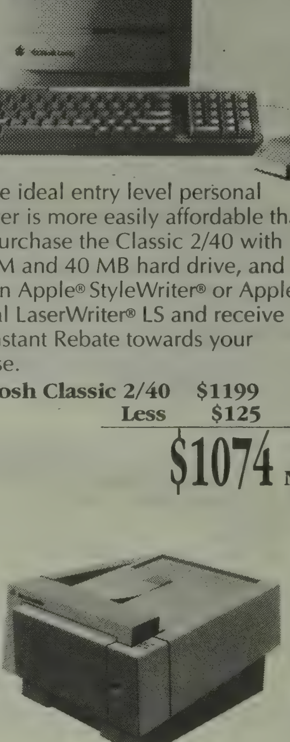
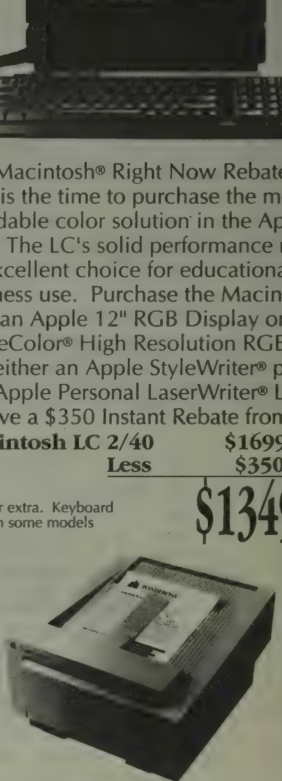


Personal LaserWriter® LS

The new personal LaserWriter® LS printer is the most affordable personal laser printer from Apple®. It's compatible with all Macintosh® computers.



Personal LaserWriter® NT

The Personal LaserWriter® NT offers individuals and small workgroups affordable, high-quality PostScript® laser printing in a compact design. This printer has a built-in AppleTalk® interface for Macintosh® computers.

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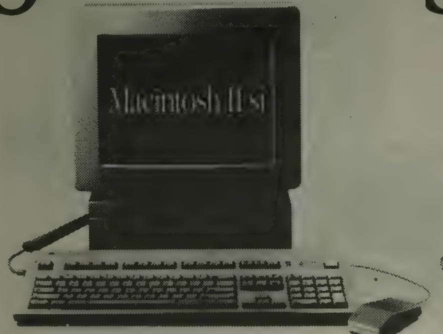

The Macintosh® IIsi has the flexibility to meet your growing demands. Equipped with color and sound capabilities, this member of the modular Macintosh product line comes with 3 MB RAM and a 40 MB hard drive making it an excellent choice for business or educational uses. Purchase the Macintosh IIsi 3/40 with either the Apple® Personal LaserWriter® LS or the Apple Personal LaserWriter NT and receive a $600 Instant Rebate towards your purchase.

Macintosh IIsi 3/40	**$2599**
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Monitor and keyboard extra. **$1999 Net***

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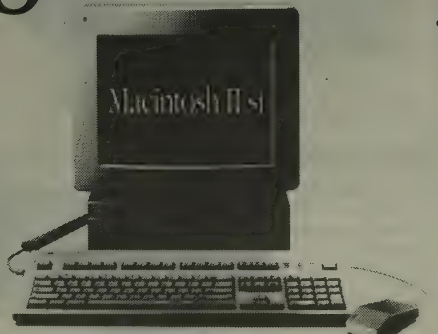

The Macintosh® IIsi's powerful 5 MB RAM configuration includes an 80 MB hard drive and a built-in cache for increased performance. System 7 capable, the powerful Macintosh IIsi 5/80 is a member of the Modular Macintosh product line. Purchase the Macintosh IIsi 5/80 with either the Apple® Personal LaserWriter® LS or the Apple Personal LaserWriter NT and receive an $800 Instant Rebate towards your purchase.

Macintosh IIsi 5/80	**$3149**
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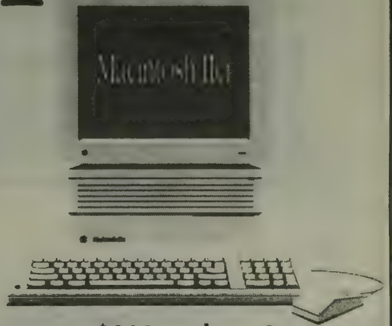

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Monitor and keyboard extra. **$1999 Net***

Macintosh IIsi 5/80	**$3149**
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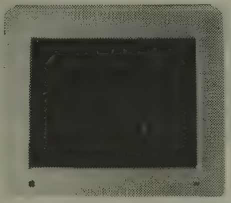
Monitor and keyboard extra. **$2349 Net***



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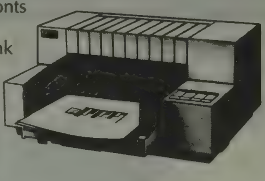

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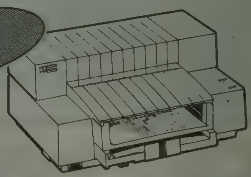

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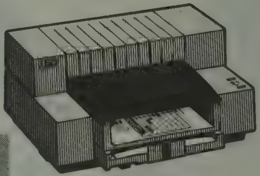

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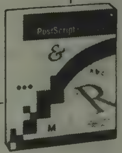

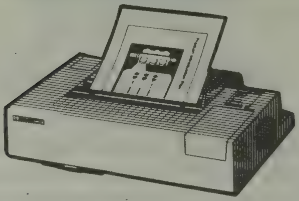

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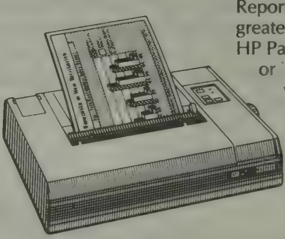

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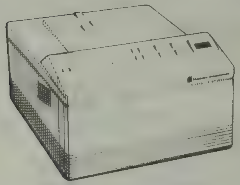

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- PCL5 allows you to scale type to thousands of sizes
- Versatile paper handling capabilities
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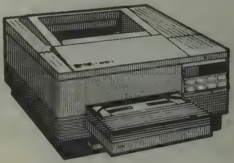
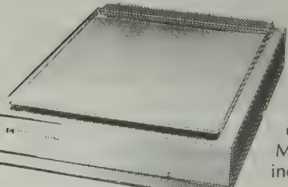
- Dependable HP performance.





HP ScanJet Plus Scanner

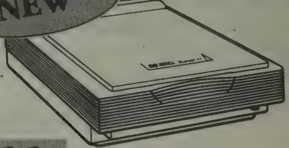
- 256 grey scale levels (8 bit) for high-resolution images
- Wide range of contrast & intensity control
- PC or Macintosh® compatible
- Price includes interface.

1149.

HP ScanJet IIc

NEW

The new HP ScanJet IIc gives you 256 levels of gray or 24-bit color professional quality documents. Supports IBM AT-compatible PCs, MicroChannel or Macintosh® personal computers.



Starting At 1495. **Price includes interface**

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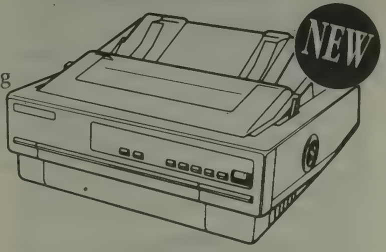
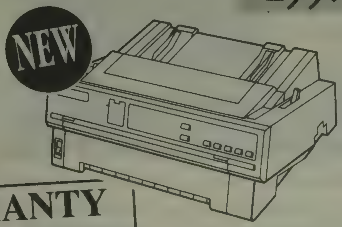


LQ-570

This new 24 pin printer utilizes scalable fonts, enhanced graphics and advanced paper handling to offer more performance than any printer in its class at an affordable price.

299.



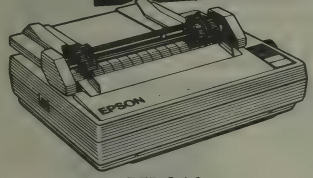
LQ-870

This new 24 pin printer is a major step forward in printer technology with high speed, and high performance that sets a new industry standard for quality with scalable fonts.

489.

LQ-1170 Wide Carriage Model.......**699.**

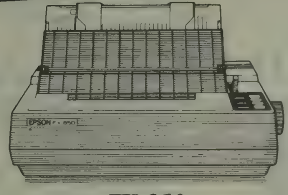
TWO YEAR WARRANTY ON ALL EPSON PRINTERS



LX-810

- 9 pin • SmartPark™ paper handling
- 200 CPS super draft • 30 CPS NLQ
- High resolution graphics.

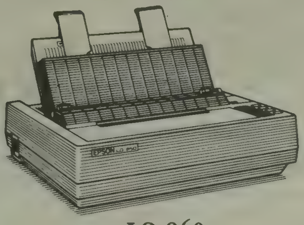
159.



FX-850

- 9 pin dot matrix • 264 draft 54 NLQ
- Push tractor paper park for single sheet feed.

295.

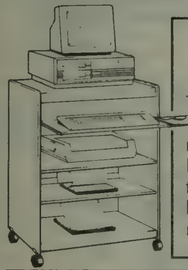


LQ-860

Epson's newest letter quality color printer

- 300 CPS draft
- 98 CPS NLQ

569.



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We now carry a full selection of Maxell brand printer ribbons. Long lasting and reasonably priced, Maxell ribbons are designed to fit the most popular printers available today. **Come in and check it out!**

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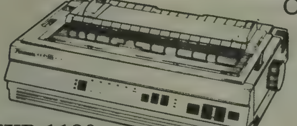
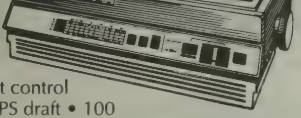


KXP-1180

- 9 pin • EZ set control panel
- 192 CPS draft
- 38 NLQ • 6 resident fonts
- Push/pull tractor
- 11.7" carriage.

149.



KX-P1124i

- 24 pin • EZ set control panel • 300 CPS draft • 100 CPS NLQ • 36 CPS SLQ • 8 resident fonts
- Push/pull tractor • 360 x 360 dpi graphics
- 2 year manufacturer's warranty

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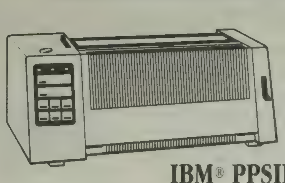

IBM® PPSII

IBM introduces 2 new 9 pin printers that can print crisp, six -part forms and thick paper stock with no problem using straight paper path technology. Solid and reliable, these printers perform flawlessly. 2380 Narrow Carriage ......**349.**

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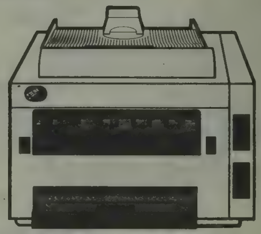

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At 5 pages per minute this 300 dpi laser will stand tall on your desk, saving valuable space. It has the best paper handling capabilities in the industry.

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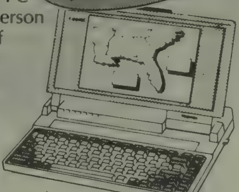
Toshiba's affordable and easy to use Notebook PC for today's business-person on the move.Plenty of comfortable features.



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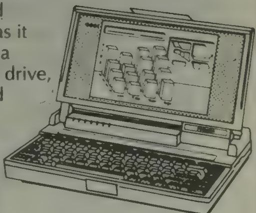
Toshiba's 6.5 pound notebook PC that has it all. A 20MB HDD, a 3.5"/1.44MB floppy drive, a terrific display and keyboard.



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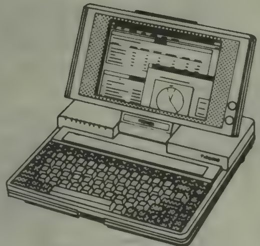
Carry 286 hard disk power in your briefcase.The Toshiba T1200XE features a large, bright display, a comfortable keyboard as well as many other performance features to enhance your productivity.



T1200XE/20 .....1649.

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Toshiba T2000SX/20

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NOW AVAILABLE IN 60 MB VERSION

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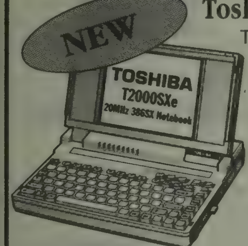

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The Toshiba T2000SXe/60 offers advanced features required by business and professional power users. Time now to replace your desktop.

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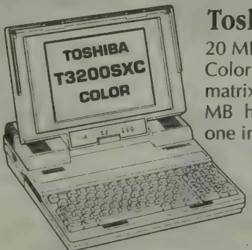

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20 MHz 80386™SX CPU. Color TFT-LCD active matrix VGA display. 120 MB hard disk drive. See one in our Berkeley Store.

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Put the total Windows™ computing solution to work for you.

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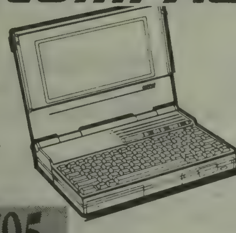
COMPAQ LTE/286 **COMPAQ** **COMPAQ LTE 386s/20**



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- 8.5" x 11" & only 7 lbs.
- 1.44 MB floppy drive
- 40MB hard drive

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Power without the Pounds

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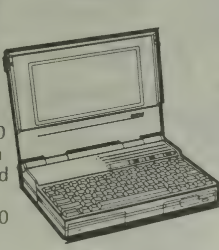

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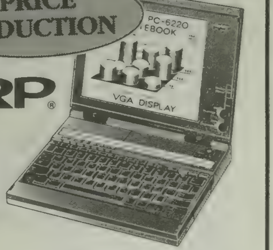

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- No switches or jumpers
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- VGA color monitor
- Analog input
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- .28 dot pitch
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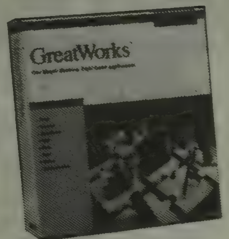

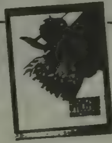

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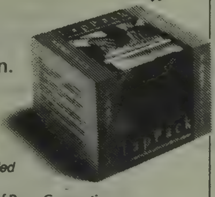

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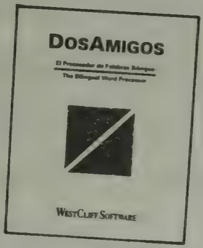
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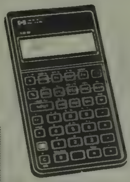

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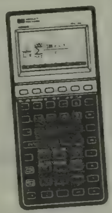

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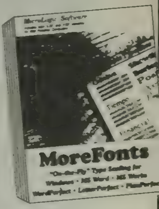
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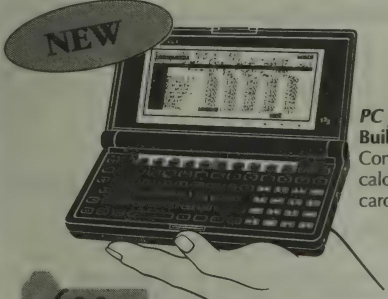

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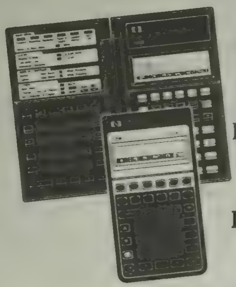

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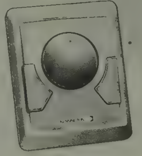

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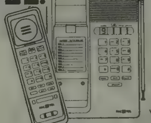

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Cybernauts And The Coup

Computer Networks In The USSR

BY ADAM GAFFIN

Posted to the Internet in response to the overloading of network servers during the attempted overthrow of Mikhail Gorbachev:

From: avg@jumbo.hq.demos.su (Vadim Antonov)
Newsgroups: talk.politics.soviet,soc.culture.soviet
Subject: PLEASE READ BEFORE YOU'LL TRY TO E-MAIL TO SOVIET UNION
Message-ID: <AAHW3ieuC1@jumbo.hq.demos.su>
Date: 19 Aug 91 22:28:49 GMT
Sender: news-server@kremvax.hq.demos.su
Reply-To: avg@jumbo.hq.demos.su
Organization: DEMOS, Moscow, USSR
Lines: 12

PLEASE STOP FLOODING THE ONLY NARROW CHANNEL WITH BOGUS MESSAGES WITH SILLY QUESTIONS. NOTE THAT IT'S NEITHER A TOY NOR A MEAN TO REACH TO YOUR RELATIVES OR FRIENDS. WE NEED THE BANDWIDTH TO HELP TO ORGANIZE THE RESISTANCE, PLEASE, DO NOT (EVEN UNINTENTIONALLY) HELP THESE FASCISTS! BEFORE SENDING SOMETHING TO SOVIET UNION PLEASE THINK TWICE (OR BETTER THRICE).

THANK YOU!

Vadim Antonov
DEMOS, Moscow, USSR

The idea that Soviets could communicate by computer network was once—literally—a joke. One of the more famous hoaxes on the worldwide Internet computer network involved a message on April 1, 1984, which purported to be from a system called "kremvax" and written by then-Soviet-leader Konstantin Chernenko: "Well, today, 840401, this is at last the Socialist Union of Soviet Republics joining the Usenet network and saying hallo to everybody."

It turned out the actual message was forged by Piet Beertema, the system administrator of a Dutch computer system. But during the failed coup against Mikhail Gorbachev, Soviet computer engineers showed it was a joke no more.

Two computer networks connecting dozens of Soviet cities became overloaded with news of anti-coup efforts and first-person accounts. Using modem-equipped NEC laptops donated only three weeks before, researchers at an economic-reform movement in Kiev quickly organized an impromptu network to organize protests. Links through Finland and San Francisco became information conduits to the West.

These networks were built through hard work, the help of European companies willing to evade Western export bans, and the unique Russian concept of "halyava"—getting somebody else to pay for them.

RELCOM, THE GLOBAL CONNECTION

"Don't worry, we're OK, though frightened and angry," one Soviet researcher wrote in a message relayed around the world by the Internet research network the day of the coup. "Moscow is full of tanks and military machines, I hate them. They try to close all mass media, they shut up CNN an hour ago, Soviet TV transmits opera and old movies. But, thanks Heaven, they don't consider Relcom mass media or they simply forgot about it."

He was referring to the "Russian Electronic Communication" network, a joint venture of the DEMOS programmers' cooperative and the Kurchatov Institute of Atomic Energy (a former military facility that built the first Soviet A-bomb) in Moscow.

DEMOS was originally set up to translate western UNIX code into a form usable on Soviet-made computers (the name comes from the Russian acronym for "Interactive Unified Portable Operating System"), but turned to creating wide-area computer networks for the Soviet Union after the Soviets abandoned efforts to build their own PCs, according to Vadim Antonov, one of the cooperative's one hundred or so programmers. Antonov, the "postmaster" of Relcom's

Two computer networks connecting dozens of Soviet cities became overloaded with news of anti-coup efforts and first-person accounts. Using modem-equipped NEC laptops donated only three weeks before, researchers at an economic-reform movement in Kiev quickly organized an impromptu network to organize protests.

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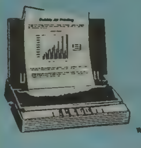
Adam Gaffin writes about personal computers for the Middlesex News *in Framingham, MA.*

Bay Area Computers Beats CompUSA Prices*



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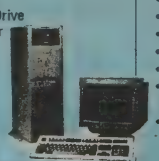

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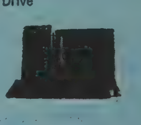

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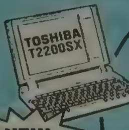

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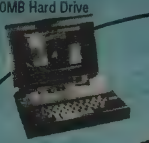

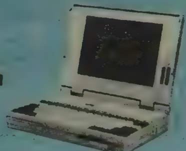

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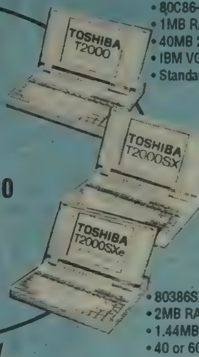

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PC MAGAZINE EDITOR'S CHOICE
April 10, 1990
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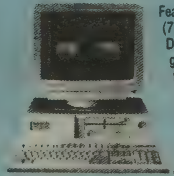

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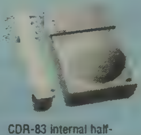

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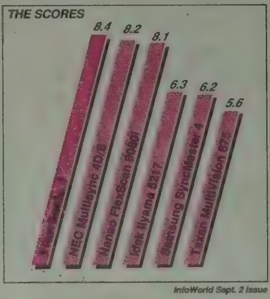

InfoWorld Sept. 2 issue

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VER. FREQ	50/60/70 Hz	50/60/70 Hz	50-100 Hz	50-90 Hz	50-90 Hz	50-90 Hz	50-90 Hz	50-90 Hz	50-90 Hz	50-90 Hz
COMPATIBILITY	VGA	VGA	8514/A, SVGA, VGA, CGA, MDA	8514/A, SVGA, VGA	VGA, 8514/A, & SVGA	UVGA. 8514/A, SVGA. VGA, Mac II(option)	UVGA, 8514/A, SVGA, VGA, Mac II(option)	UVGA, 8514/A, SVGA, VGA	1280x1024(N/I) 1024x768(N/I), VGA 8514/A, SVGA, MacII	1280x1024 1024x768(N/I), VGA 8514/A, SVGA, MacII

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Moscow hub, got virtually no sleep during the coup as he received and relayed messages.

"I'm mortally tired," Antonov told the world in a message on the Usenet network Wednesday afternoon, after the coup had collapsed. "I haven't sleep more than for four hours in the days of coup. Now it's like the war is over."

Just a year ago, Relcom was "a couple of PCs and cheap modems," Antonov says via electronic mail. Today, though, it consists of ten regional networks connected by high-speed modems and serving five hundred organizations in fifty cities. Antonov says it could double in size by next year.

"Our (network) turned to be a mean of communication of the forces of resistance," one researcher said in a message to an American computer engineer. "I really proud of it but it's really dangerous."

It's organized on the Usenet/Internet model. Machines on the network dial each other up periodically to exchange email and messages in public conferences, eventually spreading or transferring them across the network, he said.

The regional networks connect using regular phone lines but also with ISKRA-2, a "quality phone network built to serve as Communist Party's communication carrier but now available for public use," he says. Some messages are also routed through the government's VNIIPAS network, he adds.

Because the Soviet phone system is so creaky, error-correcting modems and protocols are vital. MNP and X.25, western protocols with built-in error checking, are fairly standard, Antonov says.

The regional networks are tied together with about a dozen Telebit modems, which can transmit at speeds up to 19,200 baud, according to Serge Vakulenko, another Kurchatov researcher and DEMOS member.

One of the mysteries of the coup was why the junta never cut off communications links, either within the USSR or to the outside world.

"I was surprised KGB forgot to turn off international phone exchange—I think they simply didn't know how to do it," Antonov says. Still, he doubts the KGB could have shut down Relcom, because it is a "distributed" network that has several different routing paths built in, in case one of them becomes disabled.

Under restrictions imposed by the NATO Coordinating Committee on Multilateral Export Controls, the Soviets are not supposed to have this technology. But European firms, with less fear of the US government than their American counterparts, have readily sold the Soviets the equipment.

The most advanced of the regional systems is the Moscow-area network, run by two of Digital Equipment Corp.'s microVAXes, one at DEMOS known as kremvax (the Soviets named the machine in honor of Beertema's prank), the other at the Kurchatov computer center. This network has fifty dial-in modems at 2400 baud, as well as leased lines and an internal Ethernet network, Antonov says. At one point during the coup, traffic on the networks was so heavy that messages were delayed up to five hours, he adds.

Unlike Western UNIX-based systems, however, the Soviets use an 8-bit communications protocol, which lets them send email using Cyrillic characters.

Through its Finnish link, Relcom can now exchange about 25MB of Usenet conferences and email messages a day with the West. This is still slow by Western standards—the NSFNet, the "backbone" of American research computer networks, can move 45MB of information every second.

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BBSING, SOVIET STYLE

Computer hobbyists in the USSR were also busy before the coup. There are now about sixty PC-based computer bulletin board systems in the country, many connected by Fidonet, a hobbyist-built system for transferring messages.

But unlike Americans, who can buy computers at discount stores, most Soviets cannot afford even the cheapest computer. A 386 clone costs 107,000 rubles, Vakulenko says. At black-market rates, that's about $3600, still far more than most Soviets make in several years. Modems cost between 5000 and 10,000 rubles, or about $130 or $260.

Instead, hobbyists have become skilled in using "halyava" to gain access to the PCs bought in sizable numbers in recent years by state enterprises and colleges, says Leonid Avtushenko, who runs a Leningrad BBS.

He explains the art this way: "It's the case when two men are drinking beer and third one came to them and said, 'Hey, friend, I love ya all, please give me beer too' and start to drink their beer free, or when the leader of some plant is going to USA on a trip saying he needs to make some business there and in reality he simply wants to make very expensive (and hard to get) trip free when the plant is paying for it and he is drinking beer and shopping in USA free."

For the Fidonet BBSes, this means almost all "are situated in some rich state institutes and joint ventures and none of the sysops are paying for calls," Avtushenko says.

"All other systems in USSR are halyava, too, and [none] of sysops are paying their own money. Even more, nearly [none] of BBS users are paying money; most of them are students of institutes working in some labs on computers and calling from institute phones free (and nobody noticing it), others are some engineers or programmers of some rich firms [which don't know they're] paying for the call, of course, too."

He says the system his connects with is run by a student at the Leningrad Technological Institute, who runs up phone bills of 600 rubles a month, all billed to the institute.

Avtushenko says his board is the rare exception; he pays all his BBS bills himself and owns his own computer—using money he earned running an underground computer repair business while officially working as an engineer at the Leningrad Aircraft Institute.

He says his phone bills run 200–250 rubles a month, about what he earns at the institute. This doesn't include the cost of gathering Fidonet messages, which are billed to other systems, he says, adding that if his phone bills rise much higher, he'll have to restrict user access to such "pleasure things" as email.

He adds that phone lines are "*very* bad" and that this often causes Fidonet mail packets to disappear into the ether. In Leningrad, he says, some of the current phone lines were installed before the 1917 revolution. It can take a Soviet citizen days to arrange a phone call to a foreign country, and even if he then gets through, he has to pay 12 rubles a minute.

The DEMOS group and the BBS operators don't seem to like each other much. Vakulenko scorns the way the BBS operators run their systems on other people's computers and says most of them are in it just to trade pirated software. Avtushenko says Relcom provides limited services at inflated prices.

US LINKS

Western companies were also involved in getting the word out.

San Francisco-Moscow Teleport, based in San Francisco, runs the satellite-based SovAm Teleport as a joint venture with the Soviet Institute for Automated Systems. Officials there say the connection stayed up during the coup.

The network, which has a gateway in Moscow and recently opened an office in Leningrad, now has more than five hundred clients—including MIT, the *Washington Post*, CBS, the Stanford Linear Accelerator Center, and the Bronx High School of Science—which use it as an email link with the Soviet Union.

The Institute for Global Communications, also based in San Francisco, set up a 386 machine in Moscow to serve as the nucleus of a nonprofit network.

Avtushenko says his board is the rare exception; he pays all his BBS bills himself and owns his own computer—using money he earned running an underground computer repair business while officially working as an engineer at the Leningrad Aircraft Institute.

Sprint has a computer gateway in Moscow connected to its international Sprintmail electronic-mail network, as well as a connection with an existing Soviet teletype network. But that network is a prime example of how outdated the Soviet telecommunication system is: It moves data at 50 baud. A Sprint spokesman says the company hopes to sell the Soviets data- switching equipment, but estimates that 95% of Soviet data needs could be met with a series of 9600-baud modems.

OPENING THE GLOBAL GATES

A year ago, on a visit to the US, Sergei Baranoff, a researcher at the Leningrad Institute of Informatics and Automation, complained his institute's computers were ready for tying into networks, but that bureaucrats wouldn't allow it, because they feared the loss of control.

Today, though, the institute is online.

"Our (network) turned to be a mean of communication of the forces of resistance," one researcher said in a message to an American computer engineer. "I really proud of it but it's really dangerous."

"Now I cannot even imagine that some time ago we had no email and could not read Usenet news," Vakulenko said in an email message before the coup. "Now we have gates to the world opened. It is beautiful. ... With spreading of email, the world becomes so small!"

The computers used by Kiev researchers were donated on July 31st by the East-West Education Development Foundation, a group set up by International Data Group founder Patrick McGovern and Boston Computer Exchange President Alex Randall to ship used computers to former eastern-bloc countries.

"A country cannot run on a Stalinist coup in the Information Age," Randall says. "Data bits don't see bayonets." ■

"I was surprised KGB forgot to turn off international phone exchange—I think they simply didn't know how to do it," Antonov says.

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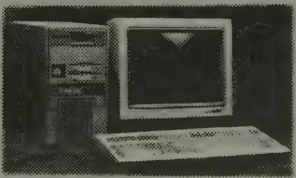

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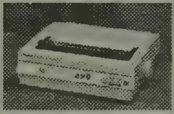

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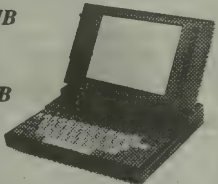

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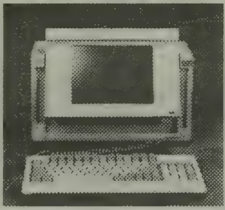

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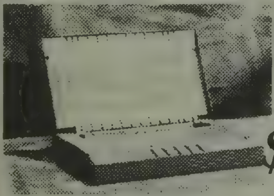

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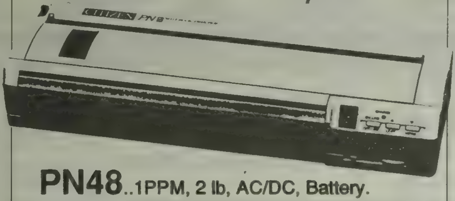

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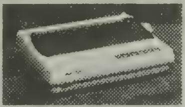

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Virtual Reality: The State Of The Art

A Report From SIGGRAPH

BY NORMAN M. GOLDFARB

Virtual Reality is now official. The organizers of July's SIGGRAPH conference in Las Vegas endorsed virtual reality as an official wave of the future with their special exhibit "Tomorrow's Realities."

On display were nineteen virtual environments, ranging from "Plasm: Above the Drome," a "3-D dance with artificial life forms," to "The Boeing VSX: Operations with Virtual Aircraft in Virtual Space." These environments were working systems, available for attendee participation. The exhibits were remarkable for their imagination, for their technical accomplishments, and for being open for business forty-five hours, twice the commercial exhibit hours.

"Nineteen virtual environments in one room," you may be saying to yourself. "So why don't I have any in *my* room?"

The answer is simple: I said the exhibits were imaginative; I didn't say they were practical. Which brings up the crucial questions: What is virtual reality? Where is the field going? What major problems remain to be solved?

WHAT IS VIRTUAL REALITY?

Good question. *Virtual Reality Report,* a popular newsletter on the subject, runs a monthly column containing nothing but definitions of virtual reality (VR). Broadly defined, virtual reality describes an interactive computer system that is so fast and intuitive that the computer disappears from the mind of the user, leaving the computer-generated environment as the reality.

Sound intriguing? It does to me. Where do I get one?

The "giant" of the virtual reality industry is VPL Research, so lets start with the best one-user system your money (and all your friends' money) can buy at VPL. (You can tell that VPL's the leader in a new industry because it has the most interesting product names.)

- RB2 Swivel software for environment construction, Virtualization for object import, Isaac for image rendering, and Body Electric for the operating system will run you $9000.
- For manual input you want at least one DataGlove at $8800. Add a DataSuit for $90,000 and up.
- VGA resolution EyePhone HRX and Control Unit cost $49,000.
- For sound, AudioSphere runs $36,495.
- Don't forget the fully configured Macintosh IIfx workstation for $14,800 and Communications Subsystem for $7300.
- Oh yes, two (one for each eye) Silicon Graphics top-of-the-line Skywriter image processors will run you $280K each.
- Grand total: $775,395.
- Move to Las Vegas and your 4% sales tax adds only $31,000.
- Feel like you're in the Supermarket Sweepstakes without a shopping cart? VPL includes a rack for free.

Before you whip out your checkbook, don't forget that you'll need a team of people and a couple of years to implement your first application; third-party application software is not yet available. Having second thoughts?

The point is that you simply cannot buy a virtual reality system that's ready to use for down-to-earth and realistically complex applications such as Computer Aided Design (CAD). (On the other hand, you can build a fabulous video game.) Even the "vanguard of power users," as VPL's Jaron Lanier aptly describes the leading VR practitioners, are principally wrestling with VR as a technology, and just beginning to solve real problems.

That's the bad news. The good news is that a multitude of people are steadily grinding down the barriers between virtual reality and reality. The better news is that for every engineer in the VR field, there are one thousand engineers solving VR problems while they address more immediate opportunities in CAD, computer graphics, consumer electronics, avionics, and telecommunications.

> **The best news is that you don't need the classical VR system of the future, complete with DataGlove and head-mounted display, to achieve the essence of VR. All you need is an interactive computer system that's fast and intuitive enough to get out of your way.**

The best news is that you don't need the classical VR system of the future, complete with DataGlove and head-mounted-display, to achieve the essence of VR. All you need is an interactive computer system that's fast and intuitive enough to get out of your way. VR today is mostly about hardware and software, but the point of VR is for those distractions to disappear, leaving the computer-generated environment as the reality. If you make it your life's work, you may even be able to do that with DOS.

WHERE IS VR GOING?

So let's return to SIGGRAPH and see where the VR technology players are taking us:

VPL Research is moving forward on a broad front. Their new EyePhone HRX head-mounted-display offers 350K pixel resolution, which would be VGA quality if they weren't spread over 108° of viewing field.

VPL's unreleased DataGlove THX with pneumatic tactile feedback will address a major limitation in VR realism: You can put your hand through apparently physical objects. (Chris Esposito of Boeing Research mentioned an interesting side effect with "reality reorienta-

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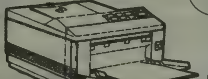

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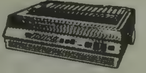

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tion": After using Boeing's VR system, he has tried to walk through *real* doors. Closed ones.)

If you thought the VR system described above was a bit pricey, VPL is introducing MicroCosm, a low-end system, *including* a Macintosh or Indigo computer, for under $50K. Although a fraction of VPL's high-end system, MicroCosm has almost the power of its top performers of a few years ago.

Broadly defined, virtual reality describes an interactive computer system that is so fast and intuitive that the computer disappears from the mind of the user, leaving the computer-generated environment as the reality.

The University of North Carolina at Chapel Hill dominated the Tomorrow's Reality exhibit with five different VR applications, from the molecular to the architectural. UNC also showed off a variety of technology, including radiosity lighting for real-time shadows, optical head-tracking, and a two-person VR modeling environment.

Division Limited introduced PROvision, a turnkey VR system based on proprietary hardware and software, rated at 35K marketing polygons per second, and priced "in the $50K range." Charles Grimsdale, managing director of Division, made the telling prediction that their market would be VR researchers for the next two years.

Sense8 Corporation was keeping busy in both the Intel and Sun booths with its WorldToolKit VR software. WorldToolKit is the best offering yet of a low-cost VR system for practical applications. Configured with a 4MB 486/25 PC, 13" high-resolution monitor (more practical than a head-mounted-display), mouse for navigation, and Intel ActionMedia i750 DVI card for real-time texture mapping, a turnkey system will run you only $15,400. Not bad.

WorldToolKit has a lot of nice features, including DXF file import, object editing in the VR environment, and kinetic animations (not just walk-throughs). Limitations? Even with Sense8's ultrafast software, DVI and PC hardware deliver only 1000 polygons per second. On the other hand, textured polygons are your best polygon value. Watch for availability on Sun, SGI, and i860 platforms.

Virtus Corporation showed Virtus WalkThrough at the new low, low price of $395. Running on the entire Macintosh line, WalkThrough combines 3-D architectural modeling and interactive viewing capabilities with a Mac-intuitive interface. On a top-end Mac IIfx, WalkThrough can handle 5000 polygon models at a frame per second as long as only 100 are visible at a time on your monitor. If you can model your environment with Virtus's built-in tools (no DXF import yet), this is the VR bargain for you.

WHAT MAJOR PROBLEMS REMAIN TO BE SOLVED?

In VR, *everything* is a major problem because a disappearing computer system is not easy to build. So here are the major challenges and what you can expect:

3-D image generation: Silicon Graphics continues as the vendor of choice for VR graphics processing. Their new $280K SkyWriter can handle 2400 texture-mapped polygons at 30 frames per second, three times the pixel throughput of last year's PowerVision VGX machine. Dual graphics pipelines can split the output for stereo viewing.

For the budget shopper, SGI's $10K bite-sized Indigo computer packs three times the power of 1987's $80K 4D/70G high-end machine, a whopping twenty-four-fold price/performance improvement in four years! You get nifty frills too. Look for SGI to address the Indigo's major limitation, 8-bit color (4-bit double-buffered), with 24-bit graphics cards later this year.

The pride of Chapel Hill is UNC's proprietary Pixel-Planes 5 multicomputer for 3-D graphics. Equipped with fifty i860 Graphics Processors and twenty Renderers, the Pixel-Planes 5 machine can produce over 1M Phong-shaded, z-buffered marketing triangles per second. An impressive home-brew.

As impressive as these machines are, VR can easily absorb ten times today's performance. The high-end machines should be there in a few years. Look for parallel architectures. Look for downscale machines and high-performance graphics cards from flight simulator suppliers. The new generation of PC cards, many using i860 RISC processors, will improve low-end performance several-fold in the next two years.

Image display: In concept, there is no substitute for a head-mounted display for getting into a virtual environment. Active

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matrix display elements today, however, have too few pixels for good resolution and too large dimensions for good optics. Coming to the rescue are companies such as Matsushita, which has demonstrated 2.8" active matrix displays with 1.2 million pixels for projection TV. Expect high-resolution head-mounted displays for $2000 in five years. You will know the technology has arrived when you can read a virtual book. Also look for desktop stereo implementations using high-resolution monitors and LCD stereoglasses from Stereographics.

3-D audio: Look for lower-cost 3-D audio systems such as Focal Point by Gehring Research. Developed on your money for the Air Force's Super Cockpit project, $1495 Focal Point software and DSP card run on Macintosh II computers.

Head-tracking: Current head-tracking technology is too slow and imprecise to keep up with real-time image generation. If your VR system is generating 20 frames per second, but they are the wrong frames, you're not having fun, you're getting a headache. Look for constrained environments such as UNC's steerable treadmill and driving metaphors that keep you in your seat. According to Fred Brooks, Jr. of UNC, the ultimate solution is predictive tracking, which fortunately works better the shorter the interval.

Hand input: Along with the head-mounted display, the DataGlove and corresponding virtual hand have come to embody VR. Pointing your index finger is now accepted code for flying in that direction. What could be more natural? According to Jaron Lanier of VPL, lots could, but the convention has been established.

There are two basic problems with the DataGlove. The first is that people generally do not use their hands directly to interact with their environment. They mediate the interaction with tools. That's why we have tool boxes. Consider all the hand gestures you would need for the tools in *your* tool box.

The other problem is precision. VR systems cannot yet track your DataGlove within the necessary fraction of an inch. This imprecision is one reason why VR users move so tentatively. VPL's tactile feedback gloves will help. However, expect to see "DataTools" and "DataHandles" that attach to virtual tools as the intuitive metaphor for real tools.

Operating system: Everybody's favorite underrated challenge, the operating system has to coordinate, in real time, a variety of subsystems with the virtual environment. This is a learning curve problem.

Environment building tools: Currently, most VR environments are constructed outside VR with 3-D CAD and modeling software. Don't look for this methodology to change fast, since VR will be a clumsy environment for some time. When it does change, look for an object-oriented environment and virtual 2-D windows.

Expect virtual interfaces to products such as Alias Upfront, by Alias Research, for intuitive interactive 3-D drawing, and FastCAD with Renderman, by Evolution Computing, for integrated CAD and rendering software. You will be able to populate your VR environments from libraries of 3-D objects by companies such as Viewpoint Animation Engineering.

Content: Everybody's favorite neglected challenge. Anyone can tell a story. It takes talent to make it interesting. The same goes double for VR, where no one really knows what the interesting stories will look like. Fortunately, that also means no one has set a very high standard yet. As large numbers of the lower-end VR systems get into the hands of The People, look for imaginative solutions to practical problems. Also look for really wild applications that you never would have thought of in a year. Let's check back then. ■

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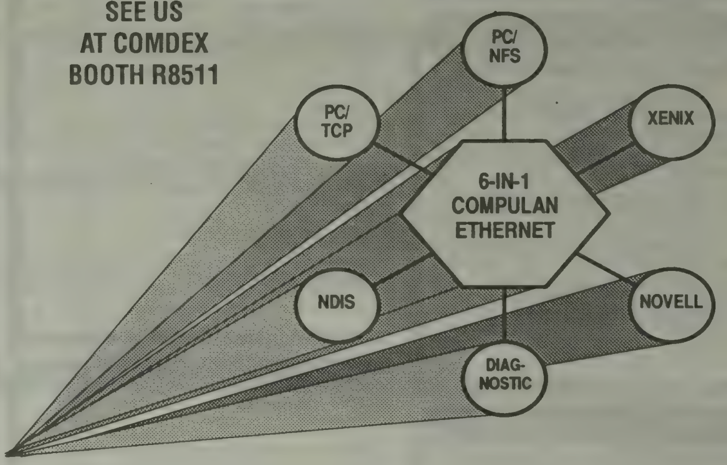

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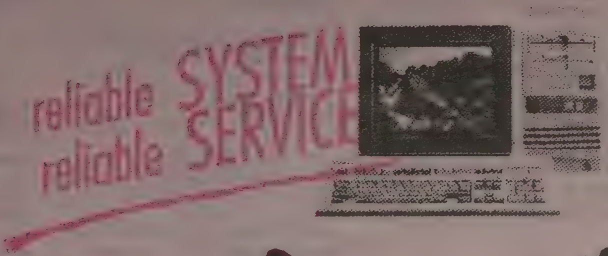

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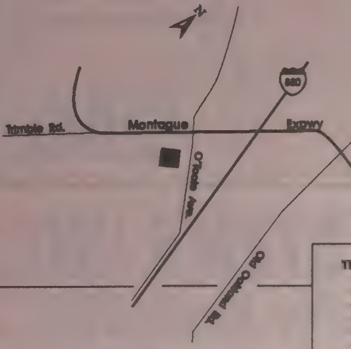

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- Socket for 80387
- 2 Serial, 1 Parallel, 1 Game Port
- Tower or desktop case w/power supply
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386-33 MHz 64K Cache

- 1 MB Expandable to 32 MB on Board
- 64K Static Cache Memory
- Landmark=57
- Shadow Ram
- 1.2 or 1.44 MB Floppy Drive
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- Socket for 80387
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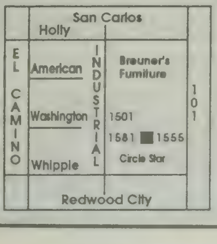

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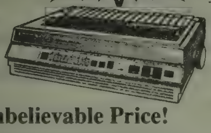

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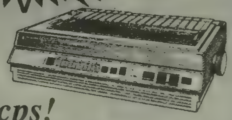

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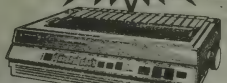

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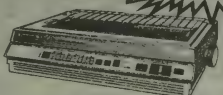

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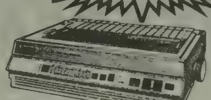

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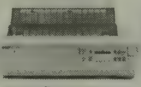

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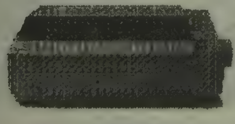

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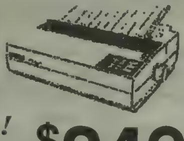

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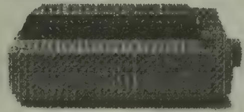

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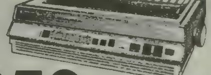

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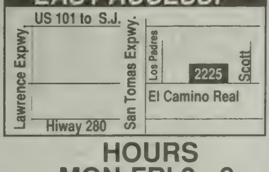

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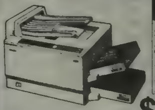

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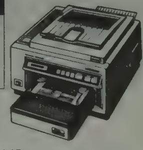

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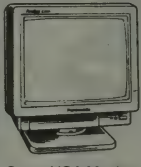

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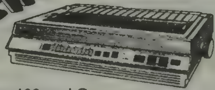

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- 24-pin letter quality
- 11 fonts, 26K buffer
- 1 year limited warranty

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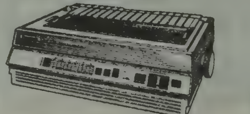

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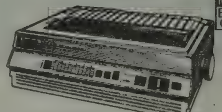

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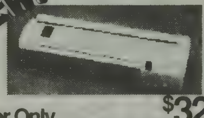

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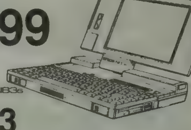

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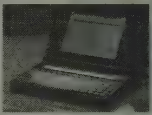

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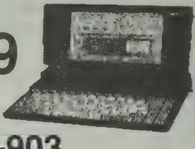

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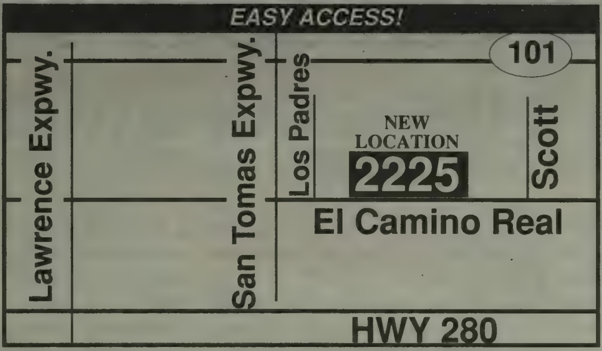

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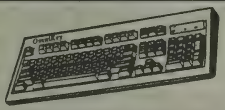

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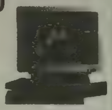

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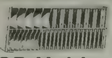

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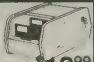

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Upgrading Your Old System To A 486

Prices Are Falling, But Shop Carefully And Test Everything

BY LENNY BAILES

This year's Intel-AMD processor wars have brought a real boon to consumers. Prices for 386/486 processors and motherboards have been plummeting steadily since the spring. Whereas the average 33MHz 486 motherboard cost around $1800 before May of 1991 (including the processor), you may currently find them on sale for around half that price.

You may have heard 486 war stories from consultants about hardware and software incompatibilities. There are a lot of vendors out there, and if you wind up with the wrong board, these horror stories could happen to you. 486 machines can be a little bit more cantankerous than their 386 counterparts, but some of the clone boards selling for under $1000 work just as well as the $2000 and $3000 configurations from name brand manufacturers. Here are some tips on how to go shopping for a 486 motherboard.

BEFORE YOU SHOP, DO YOUR HOMEWORK

486 motherboards differ from most 386 configurations in several ways.

•A regular 486 CPU has an internal math coprocessor built in. The math coprocessor speeds up the recalculation of spreadsheets and the performance of CAD packages like AutoCAD. Intel is now confusing the issue slightly by marketing a chip called the 486SX. The 486SX is a slightly cheaper, slower version of the 486, with the coprocessor specifically disabled.

•The 486 CPU has an internal static RAM cache of 8K. The static cache speeds up the performance of all applications.

•Some 486 motherboards include an additional static RAM cache of 128–512K. The external memory cache is designed to further speed up application performance.

•The BIOS and setup configurations for 486 machines may be more advanced. The motherboard should automatically configure memory and recognize your video without setting jumpers. The setup options generally offer more sophisticated user features.

It pays to audition the motherboard in a working computer before you buy it. Some vendors have demonstration models set up running Microsoft Windows. This is a good compatibility test, but it's even better to bring in your own software and try it out on the vendor's machine. Alternatively, some vendors may allow you a one-week evaluation period with full refund if you encounter compatibility problems.

INSTALLATION TIPS

I had the good luck to encounter a friendly vendor at the West Coast Computer Faire. PanPacific Computer Corporation of Sunnyvale arranged to loan me an evaluation unit of their Pan486-33 motherboard. When it arrived by mail, I had another local vendor transplant it into my then-286 computer. (PanPacific, like many other local dealers, will swap a motherboard into an existing machine for a small additional fee.)

Igor's first law of transplant operations: Back up your hard disk before you switch brains. In most cases, if you switch the same disk controller from one motherboard to another, the hard drive should boot with no problems—but not always. Another tip: If your system uses an older, MFM disk controller, ask the person who installs the motherboard to check the bus speed parameters of the new board. New, high-powered motherboards allow the bus speed to run as high as 16MHz for modern disk controllers. MFM controllers require the traditional, slower 8MHz bus speed.

Once the motherboard is installed and the computer starts properly, test it with both vanilla and complex boot configurations. If the machine won't start, boot up from a floppy and inspect the config.sys and autoexec.bat on the hard drive. If the machine won't boot properly from the floppy, then watch out! The vendor may be able to get it to work by fiddling with internal setup parameters, but if the BIOS/motherboard designers have done their job, this shouldn't be necessary. If the system has built-in serial ports or an onboard video display adapter, be sure to test those, too. (CHECKIT and QAPLUS are two popular diagnostic utilities that can perform a thorough evaluation of all hardware functions.)

If you have a 386/486 memory manager, put it into the config.sys

Continued on page 143

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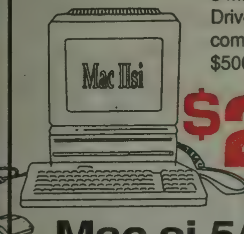

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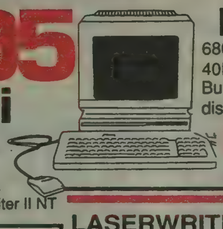

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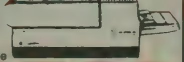

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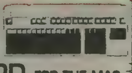

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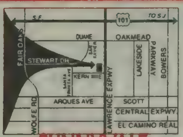

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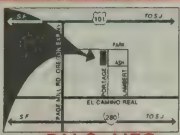

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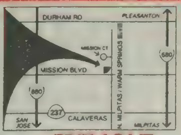

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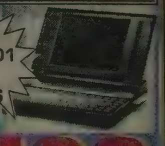

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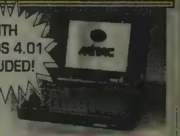

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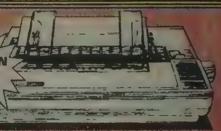

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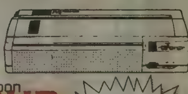

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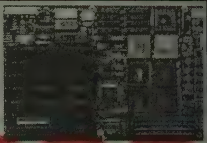

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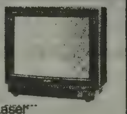

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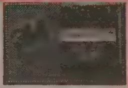

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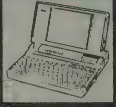

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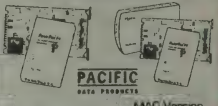
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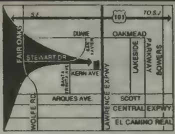
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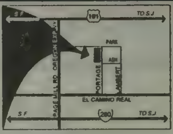
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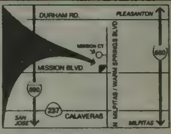
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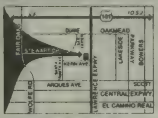

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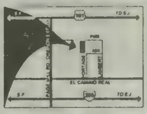

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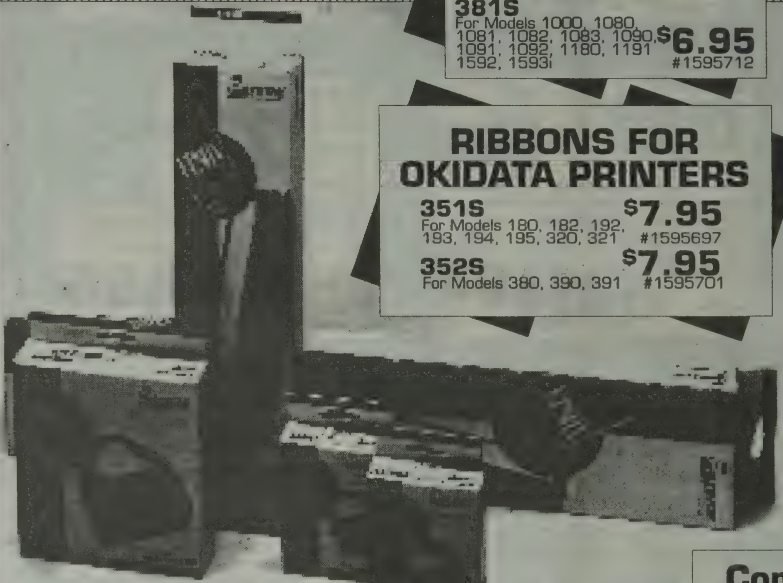

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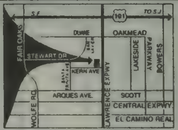
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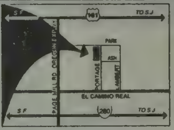
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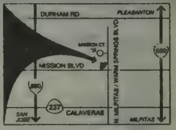
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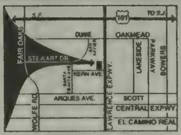
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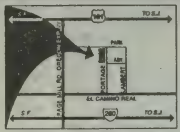
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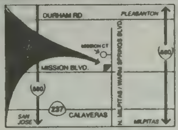
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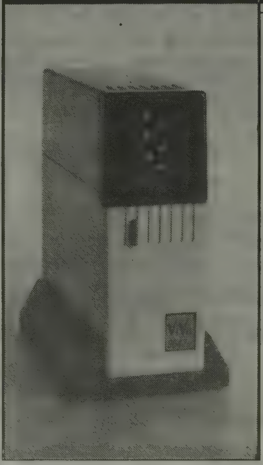

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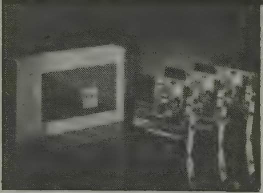

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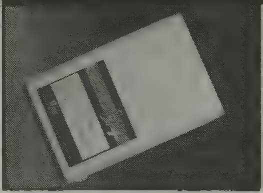

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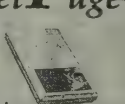

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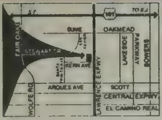
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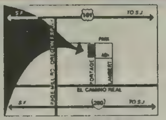
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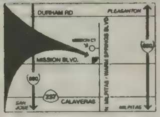
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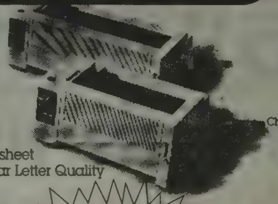

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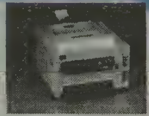

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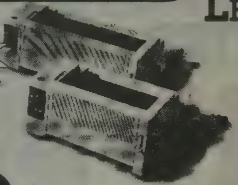

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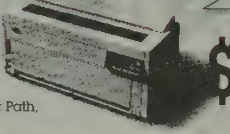

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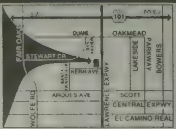
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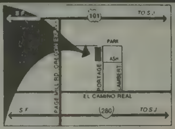
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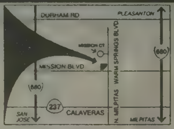
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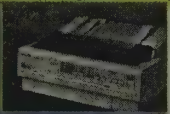

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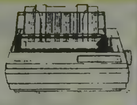

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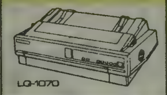

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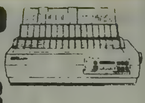

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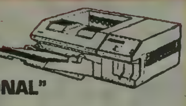

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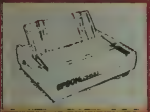

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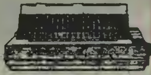

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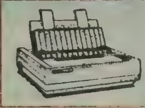

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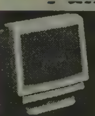

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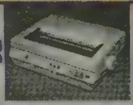

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16.5" wide carriage
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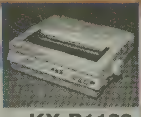

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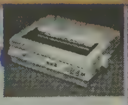

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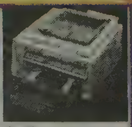

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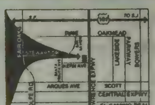

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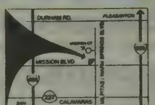

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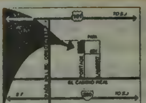

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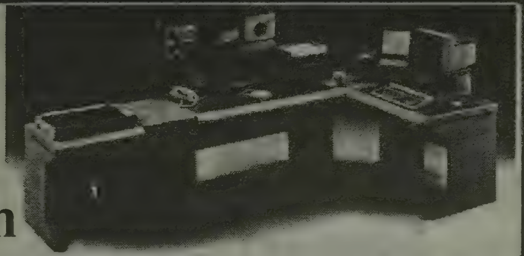

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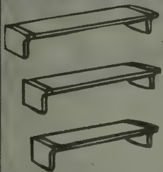

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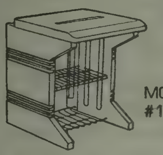

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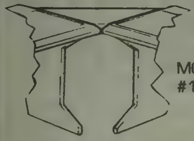

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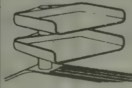

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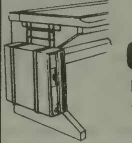

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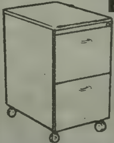

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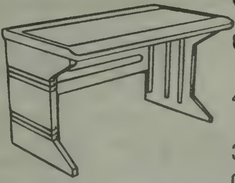

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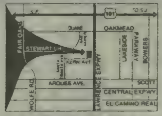
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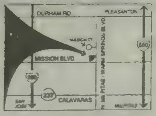
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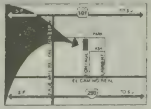
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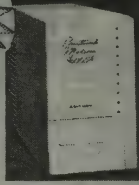

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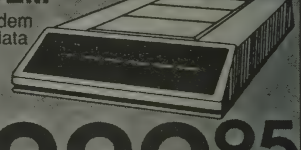

The intelligent 2400 stand-alone modem with V.42 error control and V.42bis data compression.
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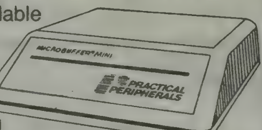

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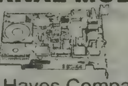

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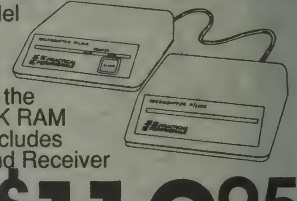

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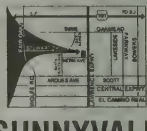

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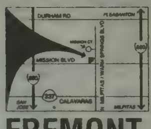

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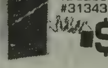

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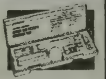

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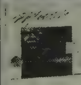

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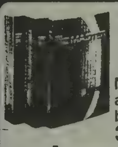

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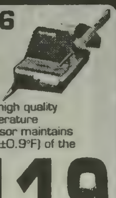

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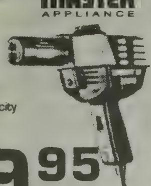

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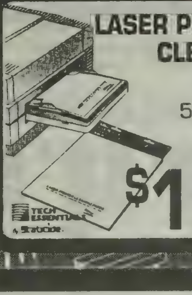

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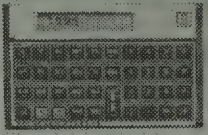

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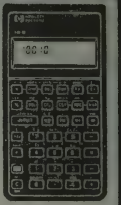

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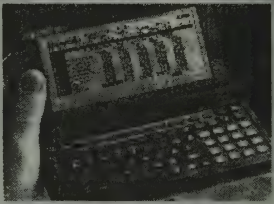

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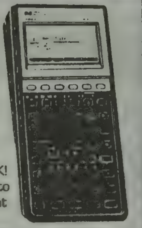

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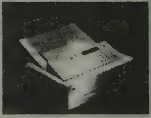

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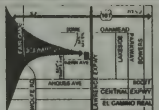

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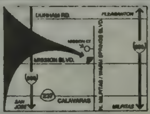

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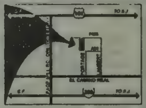

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Continued from page 126

and make sure it runs. The Himem.sys driver included with Windows or MS-DOS 5 is a good place to start. Since you probably bought the 486 to work with more than 1MB of memory, the memory manager is crucial. If the system complains or locks up when your memory manager is installed, be wary. Calls for hardware and software technical support may resolve the problem, but a good motherboard/BIOS combination shouldn't put you through the wringer. If you have Windows, make sure you can run it in enhanced mode.

THE PAN486/33

The Pan486/33 motherboard I tried ran memory managers from DOS 5, DR DOS 5&6, Quarterdeck, Qualitas, and All Computer Co. without a problem. It is of comparable speed to other 486-33 boards, even though its standard configuration does not include an external RAM-Cache. The Pan486/33 registers 151 on Landmark's v1.14 benchmark, 111 on Landmark's v2.0 benchmark, and 72.1 on Norton's SysInfo, v5. It is a baby-sized board that can fit into either a small or full-sized case. The Pan486/33 uses the Texas Instruments TCAT 83443 chip set in conjunction with MR BIOS.

Most people do a double-take the first time they hear the name of the BIOS manufacturer. Nonetheless, MR BIOS is a fairly indestructible creature. MR BIOS offers automatic configuration options and added features not implemented by Phoenix or AMI, the two major players in the PC BIOS field. MR BIOS includes built-in password protection, corrective support for exotic keyboards, and the ability to let the user select the boot drive from a prompt. Or you can just bypass the floppy drive during startup. The Texas Instruments chipset can be reconfigured to soup up performance. The bus speed can be varied from 6MHz to 20MHz. After I played with these parameters, the Landmark Video Speed test informed me that my video card had 50% faster throughput. Unlike other systems I've tortured, MR BIOS always let the setup program come up to restore the defaults.

The only criticism I have of the Pan486/33 is that the SIMMS memory modules are placed directly opposite the bus slots. If you completely populate all eight banks, you may have difficulty getting full-sized peripheral boards to fit into some of the slots. This is a common design flaw with many 386/486 baby-sized motherboards. In the case of the Pan486/33, it can be ameliorated by populating the memory slots with "low-profile" SIMMS modules, instead of the standard 9-chip-on-a-card variety. The "low-profile" SIMMS modules are available from Pan Pacific on request. They are shorter and skinnier, allowing full-sized cards to squeeze in between them.

Pan Pacific motherboards are manufactured in the United States. The president and chief designer, Simon Wang, worked for Valid Logic Systems and Fairchild before starting his own company in 1990. Pan Pacific will let you bring your own software into their store and test it to your heart's content before purchase. Complete systems are also available. They guarantee that all of their motherboards and systems will be 100% hardware and software compatible with DOS 5, UNIX, etc. If you have difficulty, they'll either resolve the problem or give you your money back. ■

RESOURCES

Pan486/33 Motherboard, $300 without CPU, $800 w/ Intel 33MHz CPU
PanPacific Computer Corporation
165 San Gabriel Drive
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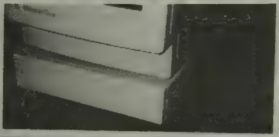

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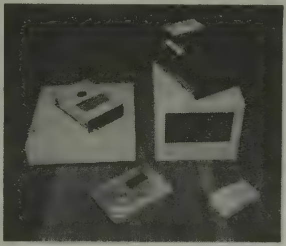

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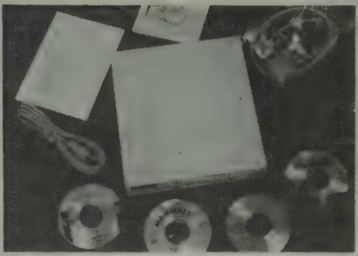
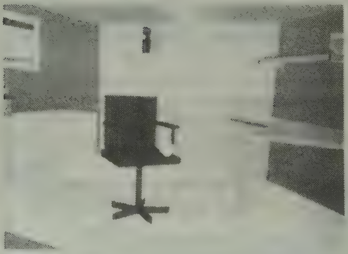


Targeted for child education and student research, the Eduquest CD-ROM hardware and software package offers an array of titles, including *Illustrated Encyclopedia, U.S. World Atlas* and a *Game Pack*. For high school and college students Eduquest offers *The CIA World Fact Book, Greatest Books Ever Written,* and *Magazine Rack* containing over three hundred popular magazines and periodicals. This package uses the Future Echo CD-ROM player, incorporating a Panasonic drive mechanism. Kits are available for IBM XT/AT compatibles, PS/2, and Macintosh computers. (Prices with software start at $499) Eduquest, Inc., 6300 Shoup #9, Woodland Hills, CA 91367. (818)992-8484.

STEREOCAD REALTIME



RealTime is StereoCAD's new interactive visualization software for creating CAD models. This package uses high-performance flight simulator technology to develop real-time, interactive walk-throughs of 3-D CAD models. With StereoCAD RealTime, architects, mechanical engineers, and other design professionals can better visualize and communicate their designs. Because RealTime is interactive, it is well suited for today's dynamic, interactive design environment. Users can efficiently develop their concepts, and share them with colleagues and clients, while avoiding the tedious off-line production of inflexible animation sequences. ($1500) StereoCAD, Inc., 10430 S. DeAnza Blvd., Suite E110, Cupertino, CA 95014. (408)446-9012.

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PRODUCT UPDATES

- ➤**The AG Group** introduced **EtherPeek v1.4**. The most significant enhancement is a set of commands that ease the inspection of captured network packets during and after capture. The AG Group, 2540 Camino Diablo, Suite 202, Walnut Creek, CA 94596. (510)937-7900.
- ➤**Aldus Corp.** announced a **trade-up** offer under which owners of certain presentation graphics programs—including Harvard Graphics, Lotus Freelance, Microsoft PowerPoint, IBM Holywood, and Draw Applause—can trade up to **Aldus Persuasion 2.0 for Windows** for $99. Complete list of eligible products is available from Aldus. The special offer will run through the end of February 1992. Aldus Corp., 411 First Ave. S., Seattle, WA 98104. 1-800-638-7058.
- ➤**Design Science** has introduced **MathType for Windows v1.1**. Design Science, Inc., 4028 Broadway, Long Beach, CA 90803. (213)433-0685.
- ➤**Envisions Solutions Technology** will now include **Professional Write PLUS** word processing program with every sale of its desktop scanners. Envisions Solutions Technology, Inc., 822 Mahler Rd., Burlingame, CA 94010. 1-800-321-3689.
- ➤**GE Information Services** is **extending its LAN connectivity** to the Apple LAN environment by adding Microsoft Mail for AppleTalk networks and QuickMail LAN to its BusinessConnect Service. Users of BusinessConnect can exchange messages with business partners who use dissimilar host, mini, or LAN-based messaging systems through GEIS's global electronic messaging service QUIK-COMM System. GE Information Services, 401 N. Washington St., Rockville, MD 20850.
- ➤**Hewlett-Packard** announced **Microsoft LAN Manager** and **IBM Lan Server** support on five network-printer interface cards that allow users to connect HP LaserJet IIIsi, IIID, IID, and Series II printers directly into a PC LAN. Hewlett-Packard Co. Inquiries, 19310 Pruneridge Ave., Cupertino, CA 95014. 1-800-752-0900.
- ➤**Virex for the PC 2.0**, from **Microcom**, now detects and treats over five hundred viruses and has expanded protection for the Windows and NetWare environments. Microcom, Inc., 500 River Ridge Dr., Norwood, MA 02062. (617)551-1000.
- ➤**Perceive 1.1**, optical character recognition software for Windows-based personal computers, now offers automatic recognition for French and German, as well as support for dot-matrix printer output. **Ocron, Inc.**, 3350 Scott Blvd., Bldg. 36, Santa Clara, CA 95054. (408)980-8900.
- ➤**Word Wrapper v2.30**, the source code-based programming tool that brings word processing functionality to Clipper, Fox, dBASE IV, and QuickSilver applications, is now available from **Strategic Edge Software.** Strategic Edge Software, Inc., 3255 Laguna, Suite 8, San Francisco, CA 94123. (415)563-3755.
- ➤**SunRize Industries** began shipping **Audition 4**, an advanced sound editor for the Commodore Amiga personal computer. SunRize Industries, Inc., 2959 S. Winchester Blvd., Suite 204, Campbell, CA (408)374-4962.

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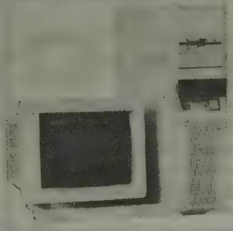

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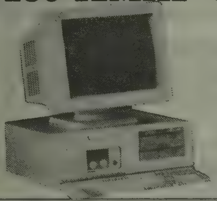

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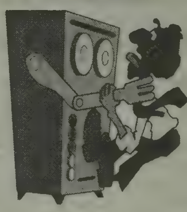

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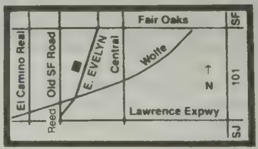

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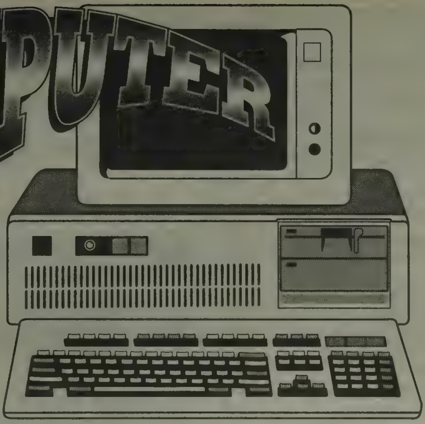

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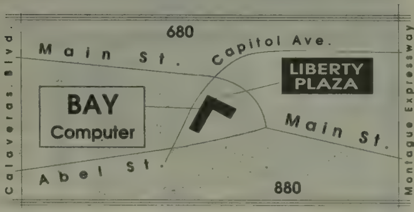

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Panasonic KX-1124	$280
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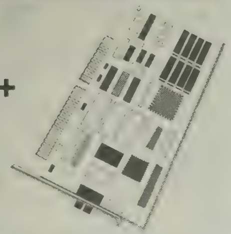

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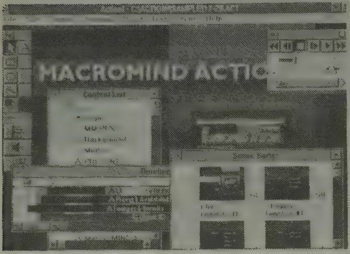
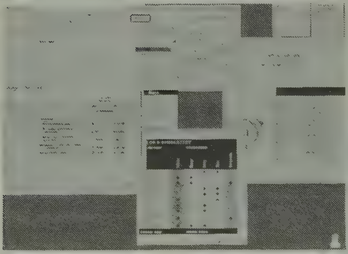
tions package, lets you quickly and easily incorporate sound, motion, and animation with text and graphics to create powerful, personal presentations. Developed for the Windows environment, Action! comes complete with dozens of ready-to-use templates. There is also a Clip Media Library, where you can choose from a variety of special sounds and graphics. Action! is ideal for laptop and notebook users to make multimedia presentations on the go. At your destination, you can connect your laptop to overhead LCD projection panels, projection video systems, or large-screen monitors to run and control a live presentation. ($495) MacroMind, Inc., 410 Townsend, Suite 408, San Francisco, CA 94107. (415)442-0200.



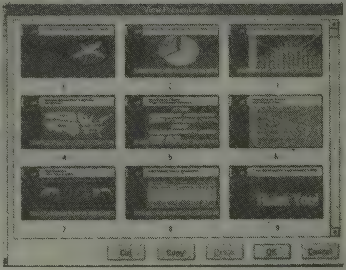
FRAMEMAKER 3.0

FrameMaker 3.0 expands its capabilities to solve a wider range of technical and business publishing needs for multiple platforms. The two key areas of enhancements are tables and conditional text. An "intelligent," cell-based tables feature lets you integrate statistical data, price lists, schedules, spreadsheets, and database information into an attractive, easy-to-read format. Conditional text capabilities let you quickly and efficiently create multiple variations of documents using one base document. FrameMaker 3.0 allows an unlimited number of user-defined condition tags, which can be applied to text, anchored frames, markers, footnotes, or even assigned to table rows. ($955 for a fixed license on Apple Macintosh, NeXT, and 386 and 486 PC running SCO OpenDesktop 1.1. The floating license price on all UNIX workstations is $2500) Frame Technology Corp., 1010 Ricon Circle., San Jose, CA 95131. (408)433-3311.



IBM HOLLYWOOD

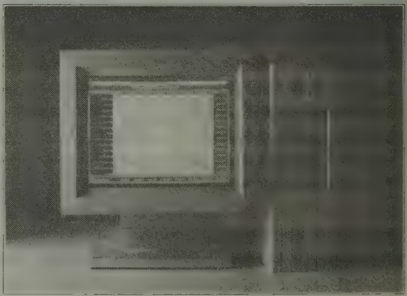
Hollywood is IBM's powerful new presentation graphics software package that allows you to create high-quality hardcopy, transparencies, slides, and on-screen presentations. The integrated outliner can be used to create text, check spelling, and organize presentations. Hollywood incorporates professionally designed templates and color schemes, Bitstream's Speedo font scaling technology, a sophisticated screen show capability, and powerful charting, drawing, and painting tools. Hollywood also works with most popular graphics file formats so users can import images from a variety of sources. It requires an IBM PS/2 or IBM PC-compatible with at least a 286 processor (386 or higher is recommended), DOS v3.3 or higher, Windows 3.0, 1.6MB RAM, and a hard disk. ($495, customers receive toll-free technical support) IBM Corp., 1133 Westchester Ave., White Plains, NY 10604.



AVAGIO PUBLISHING SYSTEM 2.0

This major upgrade of Avagio, designed for the desktop publisher, adds new features, new fonts, and smoother operation. Using less memory than earlier versions, Avagio supports up to 1MB of expanded or extended memory on a 286 or higher PC. The graphical interface is more convenient and interactive than before. The new Status Bar displays current information for fast access to basic program features. Version 2 has also taken the "drag" out of object and text frame creation. To draw any box or frame, just click the mouse once at a starting position and release the mouse. Move the cursor to any opposite corner position and click the mouse button a second time to complete the object. ($149.95) Unison World Software Corp., 1321 Harbor Bay Pkwy., Alameda, CA 94501. 1-800-444-7553.

PC HARDWARE



RADIUS PIVOT

The Full Page Pivot display and the SVGA MultiView

Continued on page 154

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- Built-In Math Co-Processor
- IDE HD/FD Controller
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- 1.2 MB Floppy Drive
- 1.44 MB Floppy Drive
- 130 MB 19ms IDE Hard Drive
- 101 Enhanced Keyboard
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- 14" Super VGA Color Monitor (1024x768 .28)
- Dallas Clock Chip for Setup Configuration

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- IDE HD/FD Controller
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- 1.44 MB Floppy Drive
- 89 MB 19ms IDE Hard Drive
- 101 Enhanced Keyboard
- Super VGA Card w/1 MB RAM
- 14" Super VGA Color Monitor (1024x768 .28)
- Dallas Clock Chip for Setup Configuration

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- 1 MB Memory
- Mini Tower Case w/Power Supply
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- 101 Enhanced Keyboard

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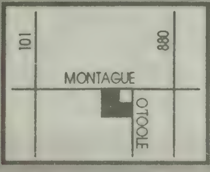

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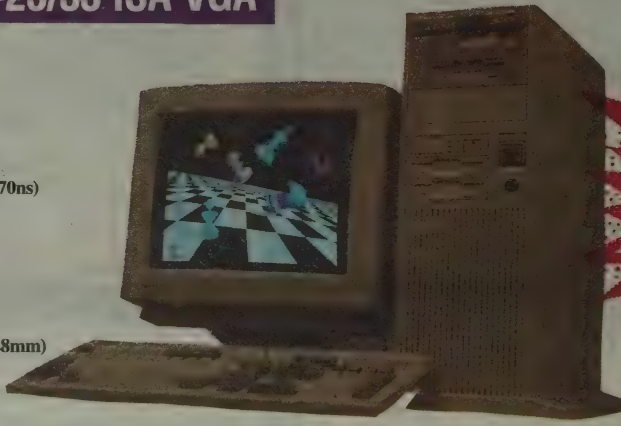
Standard Configuration

- Intel 486-25/33 CPU
- Intel Chipset
- Built in Coprocessor
- 8K Internal cache
- 128K External Cache (exp. to 256K)
- 4 MB RAM exp to 32 MB on board (70ns)
- 120 MB Hard Drive
- 5.25″ (1.2 MB) TEAC floppy drive
- 3.5″ (1.44 MB) TEAC floppy drive
- IDE FDD/HDD controller
- 2 serial, 1 parallel, 1 game port
- 16 bit SVGA card with 1 MB
- 14″ Super VGA monitor (1024x768 .28mm)
- 101 enhanced keyboard
- Middle tower case with power supply
- FCC Class B Approved



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- Built in Coprocessor
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- 256K External cache
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- Ultrastor ESDI FDD/HDD with 32K cache controller
- 5.25″ (1.2 MB) TEAC floppy drive
- 3.5″ (1.44 MB) TEAC floppy drive
- 2 serial, 1 parallel, 1 game port
- 16 bit SVGA card with 1 MB
- 14″ SVGA Monitor (1024x768 .28)
- 101 enhanced keyboard
- Full tower case with power supply
- MS-DOS manual
- FCC Class B Approved

25 MHz	$4188
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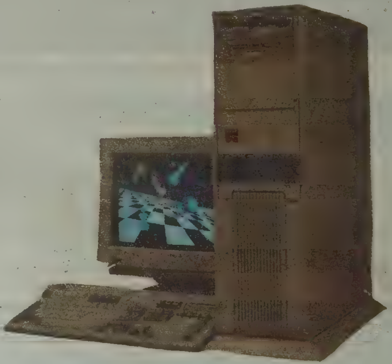

MLS TOWER 386-33/40

Standard Configuration

- Intel 386/33 CPU
- Socket for coprocessor
- 64K Cache RAM
- 4 MB RAM exp to 16 MB (70ns)
- 120 MB Conner hard drive (19ms)
- 5.25″ (1.2 MB) TEAC floppy drive
- 3.5″ (1.44 MB) TEAC floppy drive
- IDE FDD/HDD controller
- 2 serial, 1 parallel, 1 game port
- 16 bit SVGA card with 1 MB
- 14″ Super VGA monitor (1024x768 .28mm)
- 101 enhanced keyboard
- Middle tower case with power supply
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- IDE Controller
- Mono or VGA Monitor
- MGP Or 16-Bit VGA Card 1024x768 w/512K
- 2S/1P/1G
- 220W Power Supply
- Baby AT Case or Mini Upright
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LANDMARK=15.6 MHz

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- IDE Controller
- Mono or VGA Monitor
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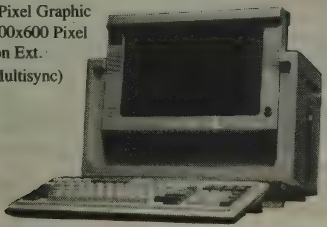

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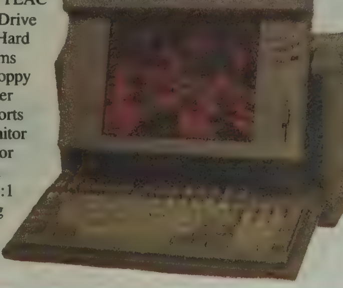

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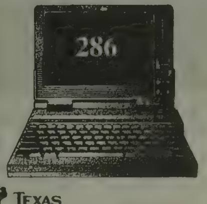

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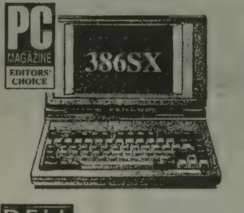

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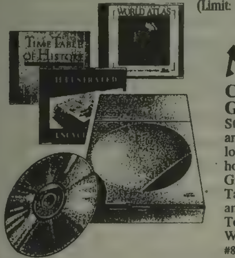

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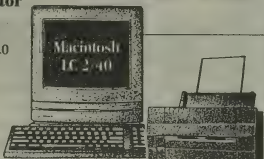

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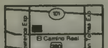

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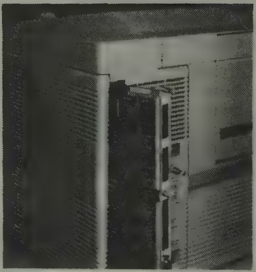
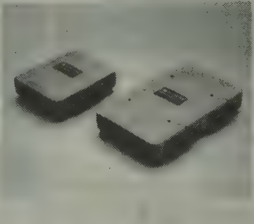
Continued from page 148

interface card, from Radius, Inc., offer the first full-page portrait color display system for PC and compatible users. The Full Page Pivot display gives users a portrait (vertical) view for WYSIWYG word processing and desktop publishing applications as well as a landscape (horizontal) view for spreadsheets and presentation graphics. The Full Page Pivot rotates smoothly between portrait and landscape modes with a simple 90-degree twist of the display and features instant desktop reorientation for the user. It features a 15" flat square tube, up to 1024 x 768 resolution, 256 colors, a refresh rate of 60Hz to 107Hz. (Suggested retail price for the Radius Full Page Pivot is $1249, the SVGA MultiView is $449) Radius, Inc., 1710 Fortune Dr., San Jose, CA 95131. (408)434-1010.



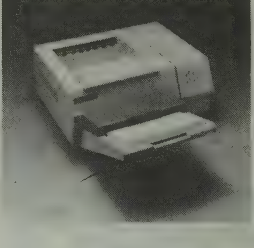
WILCO AME LASERCARD SI

Offering high-speed throughput to the HP LaserJet IIIsi internal backplane, LaserCard si lets workgroups share the cost and performance of the powerful IIIsi printer between as many as fourteen computers using four-wire, telephone-style modular cables. A fifteenth PC or a network server can be connected using the single high-speed IBM PC-style parallel input port that is also included. These cards plug into the IIIsi MIO slot, eliminating the need for a power connection or additional desk space. The LaserCard si's on-board buffer stores multiple print jobs, reducing printing lock-up and increasing workgroup productivity. It supports any computer including IBM PC and compatibles, Apple Macintoshes, HP 3000, and DEC. (Prices range from the LC7si with six serial and one parallel port for $795 to the LC15si with fourteen serial and one parallel port for $1295) Wilco AME, Inc., 1750 Junction Ct., Suite 160, San Jose, CA 95112. (408)746-3993.



SOLECTEK LASER ACCESS

The new Laser Access auto switch allows up to four computers to automatically share a printer or other peripheral. It is also bi-directional, enabling one computer to share up to four peripherals. Laser Access can be used to share printers, plotters, modems, or other devices. Models are available for either parallel or serial applications, and in two- or four-port versions. It is HP LaserJet compatible and can be used in conjunction with line extenders and buffers. (Suggested retail prices begin at $119.95 for the two-port parallel and two-port serial models) Solectek Corp., 6370 Nancy Ridge Dr., Suite 109, San Diego, CA 92121. 1-800-437-1518.



BÉZIER SYSTEMS BP1060 PRINTER

The BP1060 printer is a six-page-per-minute personal laser printer designed for high-performance workstation environments. This SCSI interfaced, raster image printer is available in versions that support the Sun SPARCstation, Apple Macintosh, and PC workstation running Microsoft Windows 3.0. The SCSI interface can transmit data up to eighty times faster than a Centronics parallel interface or AppleTalk network. The BP1060 printer is based on a three-hundred-dot-per-inch, six-page-per-minute laser print engine. The print engine's throughput and six-thousand-page-per-month duty cycle make it ideal for personal or small workgroup printing environments. ($1795) Bézier Systems, Inc., 1190 Saratoga Ave., San Jose 95129. (408)345-0345.

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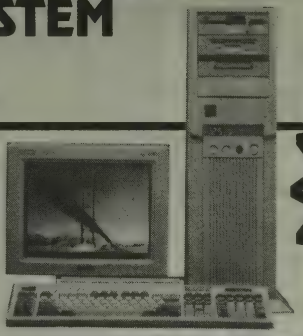

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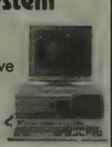

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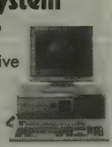

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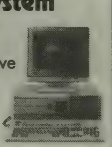

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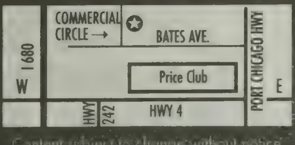

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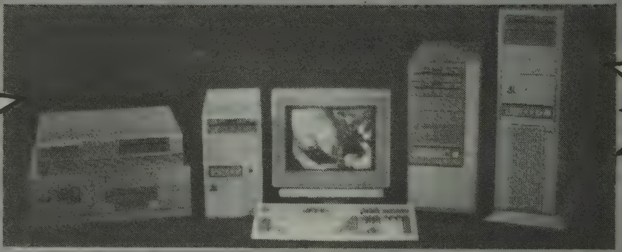

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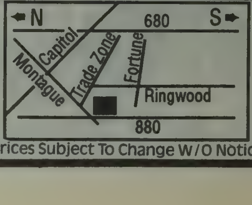

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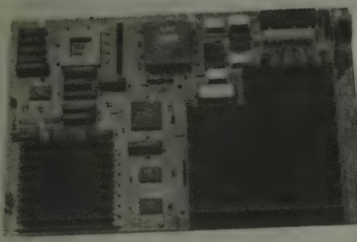

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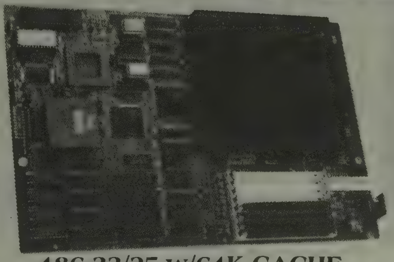

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PERFORMANCE TABLE	PAN 486-33	PAN 486-33C/64K
LANDMARK V. 1.14	151.9-152.5	151.9
NORTON SI 5.0	72.1	72.1
POWERMETER V. 1.3	14.66 MIPS	14.82 MIPS
WHETSTONES QA + (4.51)	5709.6K	5709.6 K
DRYSTONES QA + (4.51)	22758	22758

486-33 | 486-33/64K

- ▽ 80486 CPU
- ▽ 120 MB Conner HD .18ms
- ▽ CTX SVGA Monitor (1024x768)
- ▽ Trident SVGA Card/1 MB
- ▽ 1 MB On Board (Expandable to 32 MB)
- ▽ Teac 1.44 or 1.2 FD
- ▽ IDE 2 FD/HD & 2S/1P/1G Port
- ▽ Mitsumi 101 Keyboard
- ▽ Mid-Tower Case w/220 UL

$1678/$1718

386-33/64K | 386-25

- ▽ 80386DX CPU
- ▽ 120 MB Conner HD .18ms
- ▽ CTX SVGA Monitor (1024x768)
- ▽ Trident SVGA Card/1 MB
- ▽ 1 MB On Board (Expandable to 32 MB)
- ▽ Teac 1.44 or 1.2 FD
- ▽ IDE 2 FD/HD & 2S/1P/1G Port
- ▽ Mitsumi 101 Keyboard
- ▽ Mid-Tower Case w/220 UL

$1325/$1225

MOTHERBOARD w/CPU

Pan 486-33 C/64K	$830
Pan 486-33	810
Pan 486-25 C/64K	790
Pan 486-25	770
Dem 386-33 C/64K	390
Dem 386-25	310

VIDEO CARD

Tseng Lab SVGA Card/1 MB	$110
Trident SVGA Card /1 MB	79
Oak SVGA Card/512K	65

MONITORS

CTX 1024x768 SVA 14″	$320
Seiko 1440 1024x768	465

DISK DRIVES

Teac 1.2	$58
Teac 1.44	58
Conner 30104 120 MB 19ms	340
Conner 3204F 210 MB 16ms	540

KEYBOARD

Mitsumi 101 Keyboard	$35
Keytronics 101 Keyboard	45

IDE CONTROLLER

IDE with I/O, 2S/1P/1G	$28

COMPATIBILITY

DOS, OS/2, Windows 3.0, UNIX, AutoCAD, P-CAD, Novell 2.15, etc. . . .

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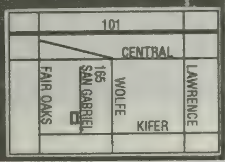
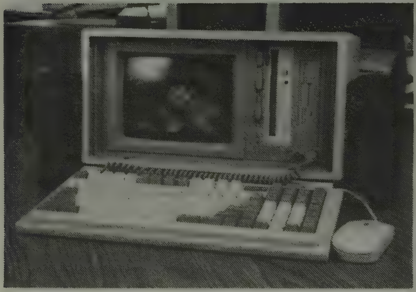
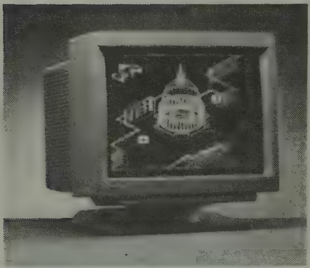
TEL: (408) 720-1315 FAX: (408) 720-1102





VGA monitor, VGA card, I/O card, mouse, and twin amplified speakers. Intel DVI (Digital Video Interactive) technology integrates full motion video, CD quality audio, full-color images, text, and graphics from a CD-ROM, hard disk, or erasable optical disk. ($7495) Synthetic Images, Inc., 1403 Camden Ave., Campbell, CA 95008. (408)371-0313.

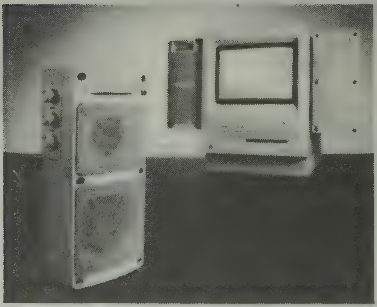
HITACHI 21" COLOR MONITOR



The Hitachi CM2187M 21" multiscanning color monitor is ideal for CAD/CAE applications. It features a 2R flat screen with square corners to eliminate screen distortion. Adjusting scan frequencies from 30 to 78KHz, the CM2187M's dual-function processor allows users to program and store up to thirty display screen presets. The monitor is compatible with VGA, Super VGA, 8501/A, 1024 x 768, 1280 x 1024, 1600 x 1200, and Mac II. Additional features include anti-reflection bonded panel, detachable tilt/swivel base, dual inputs, and front-mounted controls. ($4495) Hitachi/Nissei Sangyo America, Ltd., 800 S. St., Waltham, MA 02154. 1-800-441-4832.

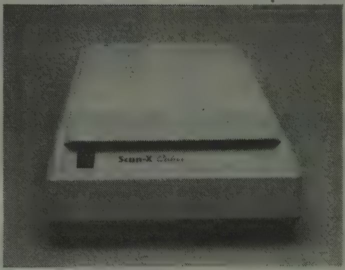
MACINTOSH HARDWARE

MACSPEAKER



MacSpeaker is a lightweight, three-way, self-powered personal speaker system that brings new levels of sonic expression and high-fidelity sound to any Macintosh. This system plugs into the Mac's mono or stereo sound output jack with the provided cable. It can also be used with additional audio equipment such as synthesizers, CD players, laserdiscs, and VCR's. MacSpeaker makes multimedia presentations more effective, and listening to CD-ROM applications is now more accurate and dramatic. It provides overall more impact from the Macintosh for more effective programs in education, corporate training, and business presentations. ($229.95, MacSpeaker; $159.95, Carrying Case; and $25.99, Tripods) Monster Design Group., 274 Wattis Way., S. San Francisco, CA 94080. (415)871-6000.

HDS MICROCOMPUTER COLOR SCANNER



The new HDS Microcomputer 24-bit color scanner includes HDS's proprietary Spectrum Enhancement technology and new software with 2400dpi for line art and 600dpi vertical resolution for color and gray. Spectrum Enhancement is a proprietary image enhancement technolgy that allows the user to define the specific dynamic range of colors that appear in an image, to make adjustments, and then to scan the image to optimally capture its colors. The Scan-X Color scanner, for the Macintosh and NeXT computers, has a palette of 16.8 million colors and accepts documents as large as 8.5" x 14". ($2795 for Macintosh, $2995 for NeXT) HDS Microcomputer US, Inc., 1350 Pear Ave., Suite C, Mountain View, CA 94043. (415)964-1400.

MEDIAPRO PROJECTION PANEL

MediaPro, from nView Corp., is an advanced, multiple source LCD projection panel that projects computer and conventional video directly from up to four sources concurrently. MediaPro utilizes an active-matrix, thin film transistor LCD, and proprietary electronics to project colorful and crisp computer graphics and video. With a range of over 32,000 colors, it can project CRT-quality images including moving and still video, multimedia presentations, and 3-D objects with smoothly contoured surfaces, all with high-contrast, saturated, true colors. MediaPro accepts video from Macintosh and IBM computers, as well as laser disk players, VCR's, television receivers, and video cameras in composite, analog RGB, S-Video, and computer digital formats. It accepts NTSC, PAL, and SECAM video signals. ($9995) nView Corp., 11835 Canon Blvd., Newport News, VA 23606. 1-800-736-8439.

MACINTOSH SOFTWARE

ARTICULATE SYSTEMS VOICE RECORD

Articulate Systems, the maker of Voice Navigator II, has introduced Voice Record 2.0. This new version combines powerful sound recording and editing capabilities into one integrated window that can be accessed either from

Continued on page 171

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486-33

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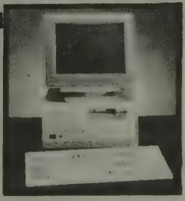
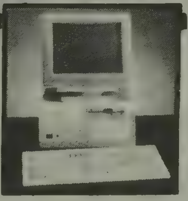


- Intel 486-33 MHz with Cache
- Teac 3.5 or 5.25 Floppy Drive
- 1 MB RAM expandable
- IDE Hard/Floppy Controller
- AT I/O Card
- Clock/Calendar
- 101 Enhanced Keyboard
- Baby AT Case

$1080

386-33

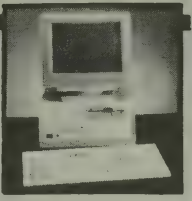
W/64K CACHE



- Intel 386-33 MHz with Cache
- Teac 3.5 or 5.25 Floppy Drive
- 1 MB RAM expandable
- IDE Hard/Floppy Controller
- AT I/O Card
- Clock/Calendar
- 101 Enhanced Keyboard
- Baby AT Case

$650

386-25



- Intel 386-25 MHz with Cache
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- IDE Hard/Floppy Controller
- AT I/O Card
- Clock/Calendar
- 101 Enhanced Keyboard
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16 bit Arcnet (Star/Bus/Coax/UTP)	**.75**	10 BASE-T Transceiver	**.59**
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- 386SX-20 MHz CPU
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- 2 MB RAM
- 1.44 Floppy Drive
- Weight 6.5 lbs
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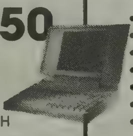

286-12

VGA NOTEBOOK WITH 20 MB HARD DRIVE

- 286-12 CPU
- VGA Monitor
- 20 MB Hard Drive
- 1 MB RAM
- 1.44 Floppy Drive
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- Dimensions 12"Wx10½"Dx2"H

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85 MB, 19ms, ST-1102A	**.270**
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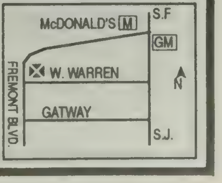

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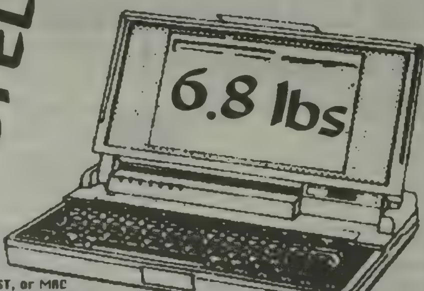

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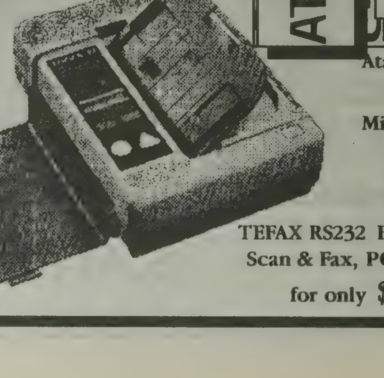

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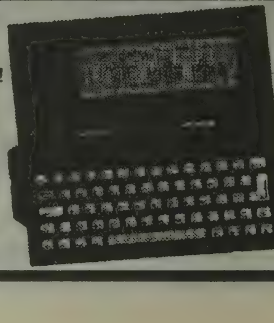

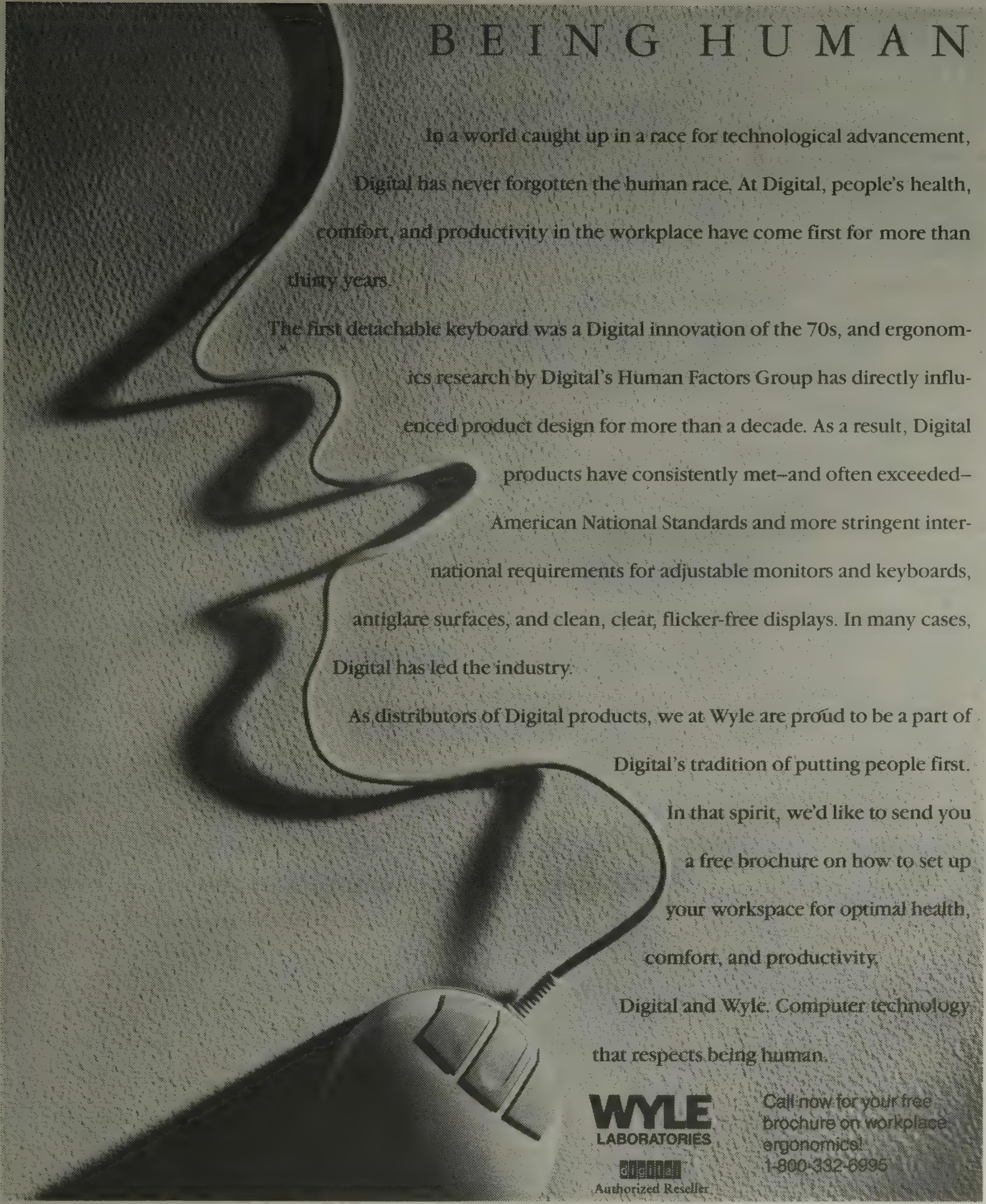

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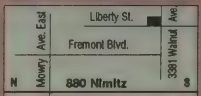

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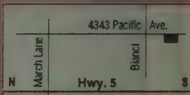

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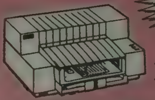

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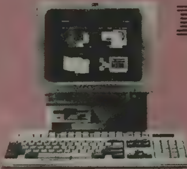

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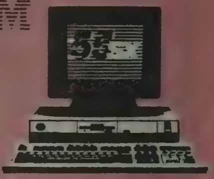

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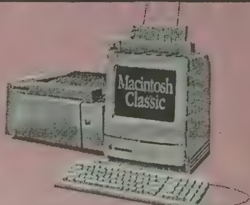

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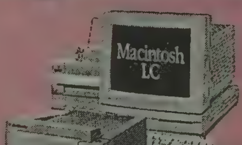

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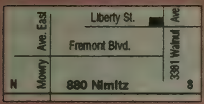

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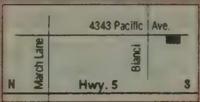

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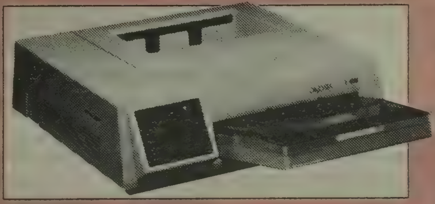

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The OL400 also comes with the longest warranty in the industry: 5 years on the printhead, plus 1 year parts and labor on the entire printer. To deliver a warranty that strong, our engineers had to re-invent the laser printer. To replace the conventional page-printer technology of laser beams, lenses and rotating mirrors, they designed a proprietary, solid-state LED printhead with no moving parts.

Its All In Our Head.

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The Okidata OK-A Badge Of Honor

The performance and features of the OL400 were good enough to earn it a PC Magazine Editors' Choice Award. But it also had to earn something else — the Okidata OK.

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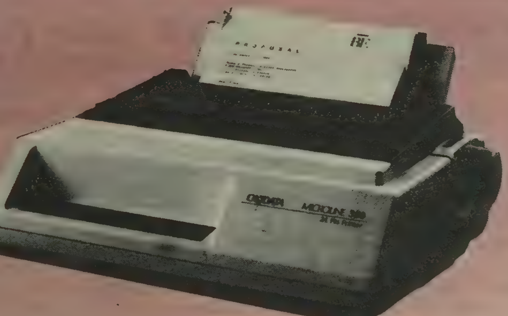
OKIDATA® 24 pin MICROLINE® 380

Technology, Speed, and Print Characteristics

Print Method:	24-pin (.20 mm diameter), Impact Dot Matrix	
Print Direction:	Bidirectional, short-line seeking	
Graphics Resolution:	60 x 72 dpi minimum 180 x 360 dpi maximum	
Print Speed and Character Matrix:	**Speed**	**Horizontal x Vertical**
Letter Quality	60 CPS	30 x 18 @ 12 cpi
Utility	180 CPS	9 x 17 @ 12 cpi
Characters Per Line:	**CPI**	**Max. Char./Line**
	10	80
	12	96
	15	120
	17.1	137
	20	160
	PS	—
Vertical Line Spacing:	**Fixed**	**Variable**
	6 lpi	n/60"
	8 lpi	n/180"
Feed Rate:	2.2 ips	
Character Sets:	Standard ASCII Epson Character Set IBM Set I and II 14 Foreign Language Sets Zero/Slashed Zero	

Emulation, Interface, Memory and Front Panel

Emulation:	Epson® LQ
Interface:	Parallel Standard Optional 19.2 kb Super-Speed Serial RS232-C(Ready/Busy, X-ON/X-OFF)
Memory	
Print Buffer	8K
DLL	14.5K Maximum
Front Panel Switches:	Select Line Feed/Form Feed Top of Form/Paper Park Font Selection Pitch Selection
Menu Mode:	Print — Prints Entire Menu Group — Selects Group Function Item — Selects Item Set — Selects Item Value Exit — Exit Menu Mode, Enter Select State



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Single Part Paper Weight:	14 to 22 lb
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Print Features

Six Resident Fonts	Emphasized	Enhanced
Italics	Double Height	Double Width
Continuous Underlining	Super/Subscripts	Outline/Shadow

Warranty, Reliability, and Environmental

Limited Warranty:	One year parts, labor, and printhead	
Service:	Authorized OKIDATA Service Centers	
Reliability:		
MTBF	4,000 hours (25% duty cycle, 35% page density)	
MTTR	15 minutes	
Printer Life:	12,000 hrs (25% duty cycle, 35% page density)	
Printhead Life:	200,000,000 characters avg. in 10 cpi draft mode @ normal 25% duty, 35% page density (user replaceable)	
Size:	15.7" (w) x 13.6" (d) x 4.7" (h) [39.8 cm (w) x 34.5 cm (d) x 12.0 cm (h)]	
Footprint:	213.5 in.^{2} (1373 cm^2)	
Net Weight:	16 lbs. (7.3 kg) UPS Shippable	
Electrical:	120 VAC (± 10%), 220/240 VAC (± 10%),	
Frequency:	50/60 Hz (± 2%)	
Power Consumption:	**Operating**	**Idle**
	86 VA	22 VA
Operating Temperature:	41°F to 95°F @ 20 to 90% Rel. Humidity (5°C to 35°C)	
Storage Temperature:	− 40°F to 158°F @ 5 to 95% Rel. Humidity (− 40°C to 70°C)	
Altitude	10,000 feet (3,048 m)	
Safety:	UL: UL478 CSA: C22.2 (220) FCC: Class B	
Acoustic Noise:	57dBA	

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HRW Desktop Systems

Standard System · Hard Drive · Monitor & Video Card

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386SX/20 Super VGA	$929	$1,029	$1,079	$1,104	$1,354
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Standard System · Tower Case · Hard Drive · Monitor & Video Card

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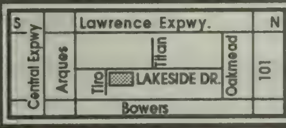

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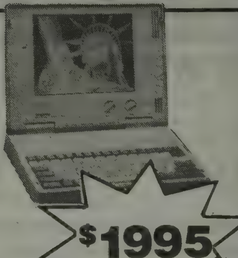

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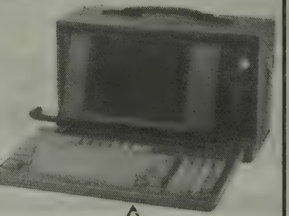

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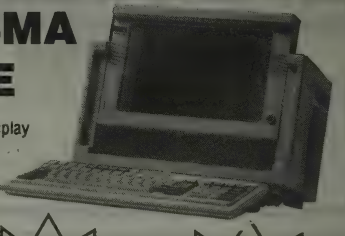

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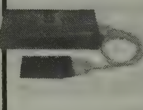

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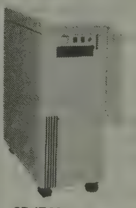

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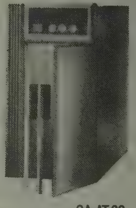

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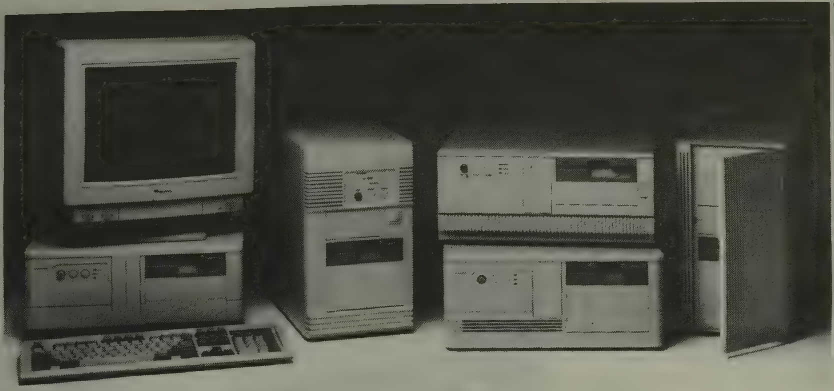

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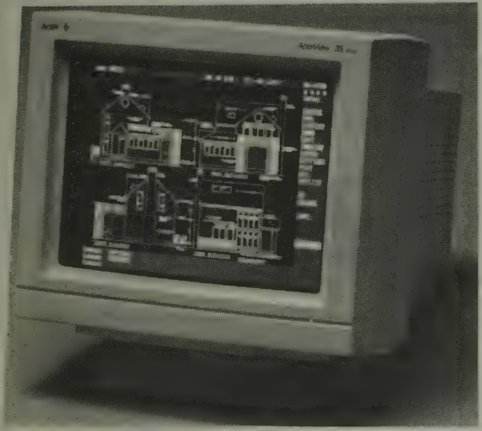

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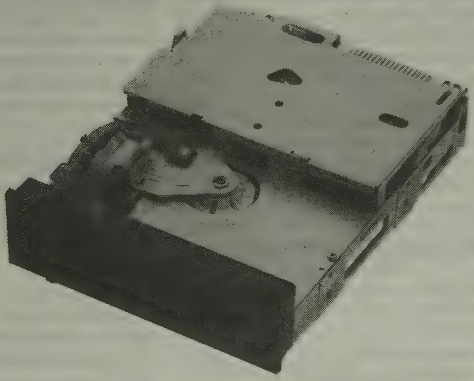

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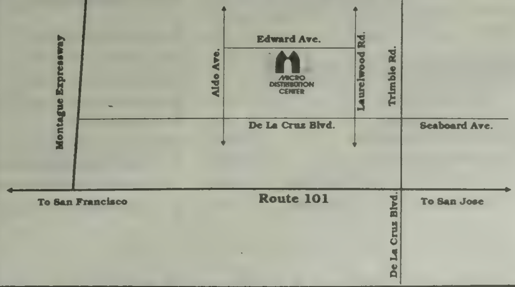
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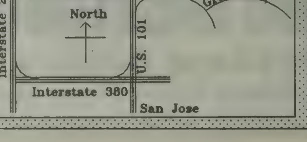

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Continued from page 158

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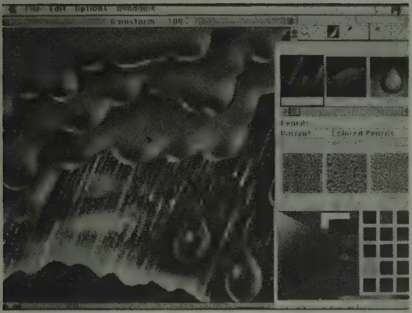

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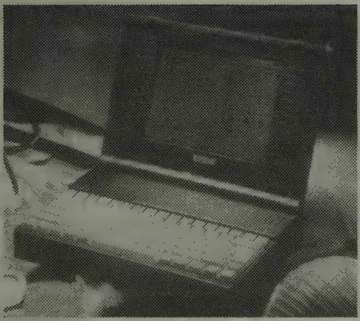
LAPTOPS



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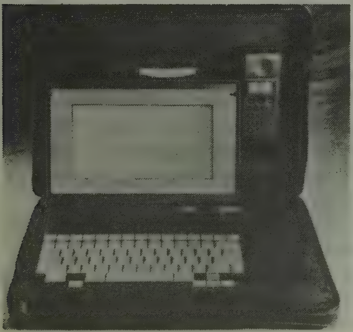

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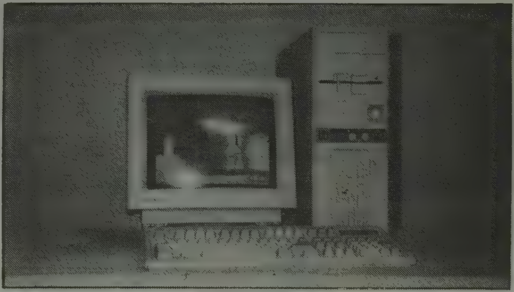

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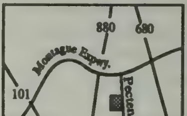
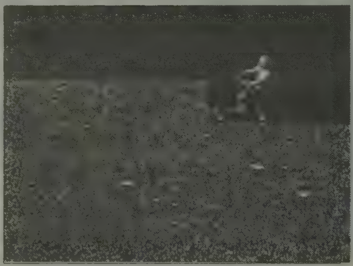


GAME REVIEWS

By Mike Markowitz

MORE AFTER DARK VOLUME 1

Published By: Berkeley Systems
For: Macintosh, requires After Dark 2.0 screen saver, System 7 compatible
List Price: $39.95



If you look closely at an old Macintosh, you can often see a ghost image of the menu bar burned permanently into the screen by thousands of hours of continuous electron bombardment. Like the valves in our engines and the joints in our knees, the phosphor coating inside a video monitor eventually wears out. "Screen savers" were invented to eliminate, or at least postpone, this damage. After a user-defined period of no keystrokes or mouse movements, the screen saver blanks out the video display, replacing it with an ever-changing picture to let you know the computer is still on. Macintosh screen savers are usually CDEV's (control panel devices), which load into memory when you turn on the computer and remain unobtrusively in the background when other applications are running.

After Dark, from Berkeley Systems, turned the humble screen saver into a programmer's art form. It has proven so popular that another disk of plug-in modules has now been released: More After Dark. The twenty-six new modules add up to over 1.5MB, but they are compressed on the disk (using Compactor) as a "self-extracting" archive—you just double-click to unpack everything onto your hard disk. The package includes new animated tropical fish that can be added to After Dark's Fish module. A color Mac is now cheaper than a well-stocked salt-water aquarium, and virtual fish don't have to be fed. Also "Virex-D" will scan your hard drive for viruses, while displaying a blow-up of each file's icon.

More After Dark includes a very intense little spacecraft shoot-em up game, Lunatic Fringe, by Ben Haller. The game is played entirely from the keyboard—*you have to remember not to touch the mouse*—this is a screen saver, after all.

"Meadow" gradually fills your screen with rolling hills covered in grass and wildflowers. "Globe" is a spinning Earth that drifts across the screen, but you can have it wrap any other graphic image into a ball. "Mandelbrot" paints the screen with a spectacular colored version of the famous fractal geometry image, and then zooms in on randomly selected areas. "Say What" randomly displays 197 humorous quotes (you can edit the list).

"Mowin' Man" fills the screen with blades of grass and flowers, which are periodically decimated by an animated riding mower. "Boris" is a charming gray and white kitten that chases, but never catches, a butterfly. "Terraform" and Mountains" both generate impres-

Continued on page 180

HD COMPUTER

The HD Computer is definitely not another "run of the mill" machine.

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COMPUTER SHOPPER
June, 1991 P. 246

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- BUILT-IN MATH COPROCESSOR
- WEITEK COPROCESSOR SOCKET
- CLOCK/CALENDAR W/BATTERY BACKUP
- INCLUDES SHADOW RAM FOR FAST BIOS ACCESS
- 3-BUTTON HIGH RESOLUTION MOUSE
- VERTICAL CASE WITH POWER SUPPLY

The 486 is the most powerful PC available on the market today. At 25MHz, the system performance is at 10.95 MIPS (Million Instructions per Second) and the 33 MHz version is over 30% faster at 14.49 MIPS. Such processing speeds are ideal for number crunching programs like AUTOCAD, TOPAS, and other computer graphics applications. As with all our models, the HD 486 supports MS-DOS, OS/2, UNIX, ZENIX, PC-DOS/386 and DR-DOS.

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40MHz $1,795

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- * 64K CACHE EXPANDABLE TO 256K
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- * 1.2MB OR 1.4MB FLOPPY DRIVE
- * VERTICAL CASE WITH POWER SUPPLY
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- * 8 EXPANSION SLOTS
- * 101 KEY-ENHANCED KEYBOARD
- * 387 COPROCESSOR SOCKET SUPPORTS WEITEK, CYRIX & IIT COPROCESSORS
- * CLOCK/CALENDAR WITH BATTERY BACKUP
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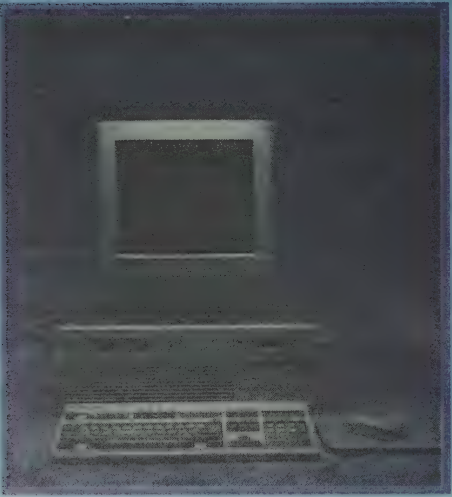
- * 3-BUTTON HIGH RESOLUTION MOUSE



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- * 2 SERIAL, 1 PARALLEL & 1 GAME PORTS
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- * 1.2MB OR 1.4MB FLOPPY DRIVE
- * 2 SERIAL, 1 PARALLEL & 1 GAME PORTS
- * 101 KEY-ENHANCED KEYBOARD
- * 387SX COPROCESSOR SOCKET
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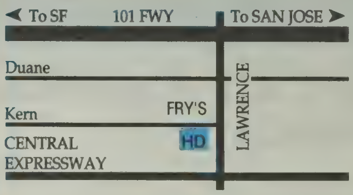
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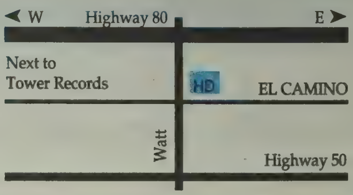
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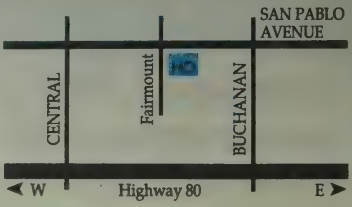
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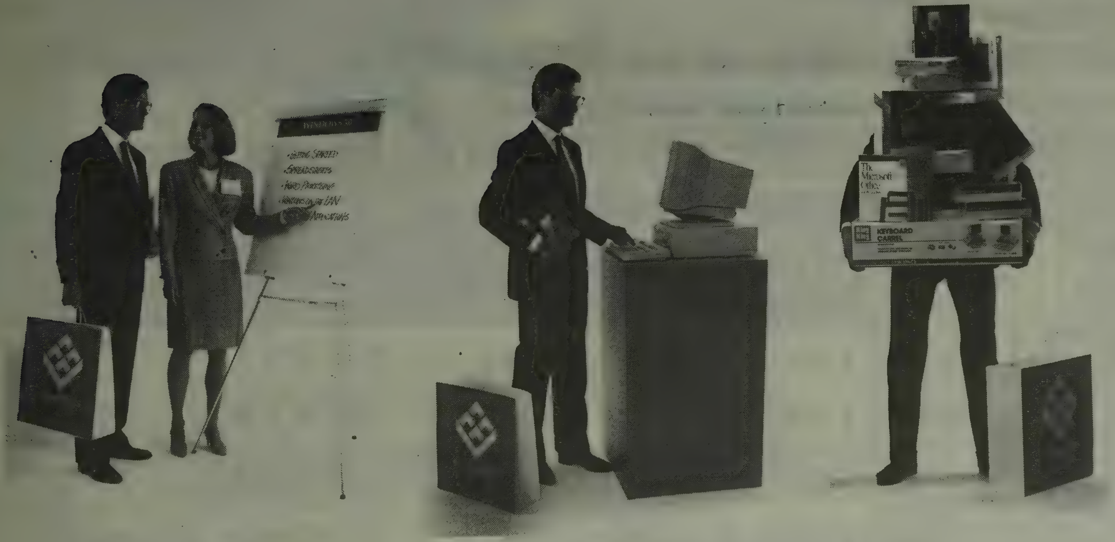

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- MATH COPROCESSOR SOCKET
- CLOCK/CALENDAR w/BATTERY BACKUP
- INCLUDES SHADOW RAM FOR

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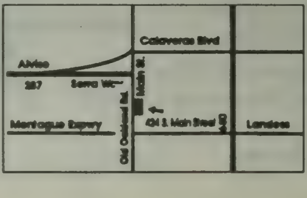

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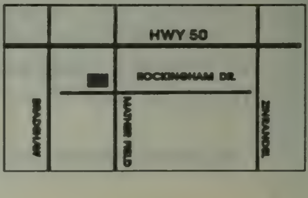

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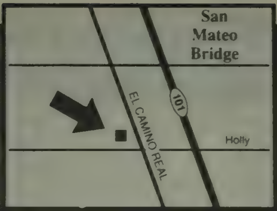

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2 MB Module	225
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Continued from page 172

sively realistic maps, using fractal algorithms. "Stained Glass" generates hypnotic, intricate kaleidoscope patterns.

More After Dark is easy to install and manage, more entertaining than most network television, and highly recommended for any Mac user with a color monitor. (Berkeley Systems, Inc., 2095 Rose St., Berkeley, CA 94709. 510/540-5535)

BICYCLE SOLITAIRE

Published By: SWFTE International, Inc. (724 Yorklyn Rd., Suite 150, Hockessin, DE 19707. 302/234-1740)
For: IBM PC and compatibles (512K, CGA, EGA, or VGA, package includes 5.25" and 3.5" disks)
List Price: $39.95

The rules of card games are public domain, but the classic Bicycle card back designs belong to the U.S. Playing Card Company, which has licensed them to a small Delaware software company for this very attractive game.

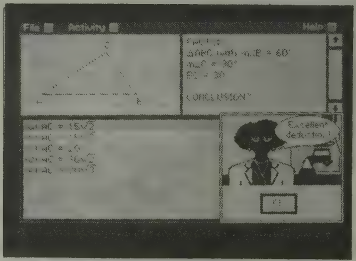
Microsoft included one version of Solitaire ("Klondike") with Windows 3.0, much to the detriment of American corporate productivity. Bicycle Solitaire includes the variants known as Klondike, Golf, Auld Lang Syne, Canfield, Calculation, Little Spider, and Four Seasons. Actually, there are over 150 different versions—all described in a little booklet—along with a deck of real playing cards, included in the package.

The games can all be played from the keyboard, but are faster and more fun with a mouse.

WHAT'S MY ANGLE?

Published By: Davidson & Associates
For: IBM PC and compatibles, 512K, CGA, MCGA, EGA, VGA, or Hercules graphics, supports Ad Lib and Sound Blaster audio cards
List Price: $49.95 (two-copy Teacher's edition is $59.95, five-copy Lab pack is $149.95)

Geometry is fundamental for work in engineering, graphic arts, and many other careers. Although geometry is perhaps the most concrete and attractive branch of mathematics, this has not spared it from the general crisis of demoralization and deterioration of math teaching in public schools.



The widespread hope that putting computers into the classroom can somehow reverse this trend creates a market for software like "What's My Angle?" The program includes five activities:

GeoBoard is a drawing environment that emulates the straightedge and compass of classic Euclidian geometry. You can select objects and call up information about dimensions and angles. GeoBoard uses a guided discovery approach, asking leading questions and providing hints and tips as needed.

GeoLife presents practical problems drawn from the lives of an astronaut, an athlete, a carpenter, a farmer,

Continued on page 185

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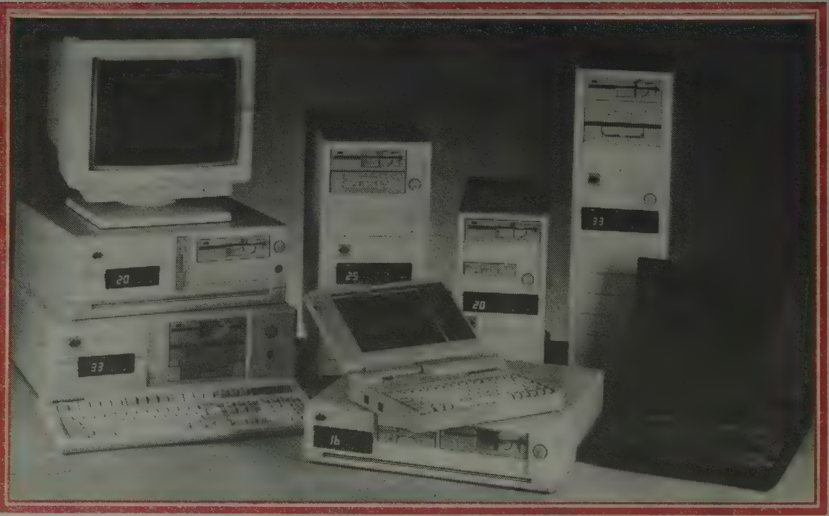

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Continued from page 180

and a rock star.

GeoConclusions presents a diagram and a set of given conditions, along with a list of possible conclusions. You have to select the valid conclusions.

GeoProofs requires you to unscramble a mixed-up proof of a geometric theorem.

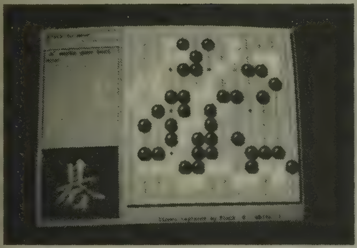
GeoGolf is a miniature Golf game in which you must estimate and type in an angle to make your shot.

What's My Angle? covers a full year curriculum for plane geometry. It includes an extensive glossary of geometry terms, as well as a student record-keeping system, and lets you print certificates of achievement. The package includes both 3.5" (720K) and 5.25" (360K) disks. The program works with mouse or keyboard, and supports the low-resolution CGA graphics found on most older PC's in schools. (Davidson & Associates, Inc., 3135 Kashiwa St., Torrance, CA 90505. 1-800-556-6141)

THE MANY FACES OF GO

Program By: David Fotland
Published By: Ishi Press
For: IBM PC (512K, VGA, EGA, CGA Tandy or Hercules Graphics, supports mouse) package includes 3.5" and 5.25" disks
List Price: $59.95

The ancient Chinese strategy game of Go was introduced into Japan around the eighth century A.D. Like chess in western civilization, it has long been an intellectual pastime, and a source of concepts and metaphors for thinking about military strategy. The physical components of the game are deceptively simple: a 19 x 19 grid and two large sets of identical round black and white stones. Players alternately place one stone on any grid intersection, with the object of surrounding the greatest possible territory. Any group of stones that is completely surrounded, with no internal open space, is captured. Like so many things in Japanese culture, a system of profound depth and subtlety is built up from this simple foundation.



The Many Faces of Go is designed for the beginner as well as the advanced player. There is an extensive online tutorial. The program can offer suggestions or "explain" the reasons for its moves. The program can play either side, or mediate a game between two human opponents. You can select either Chinese or Japanese rules (which differ slightly in scoring and placement of handicap stones).

For a faster game, you can choose a smaller board, down to a 9 x 9 grid. A complete game can be "archived" to disk for subsequent study. A number of pre-recorded master games are provided. The 43-page manual includes a history of the game, a glossary of Japanese terms, a bibliography, and a fascinating appendix that discusses the problems of computerizing Go.

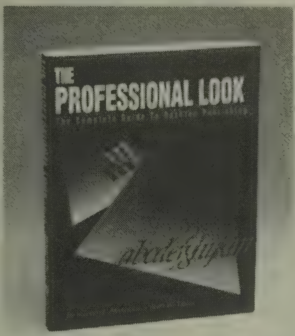
The program won the 1991 North American Computer Go Championship. The Many Faces of Go is highly recommended for anyone interested in strategy games. (Ishi Press, Inc., 76 Bonaventura Dr., San Jose, CA 95134. 408/944-9900)

BOOK REVIEW

THE PROFESSIONAL LOOK: THE COMPLETE GUIDE TO DESKTOP PUBLISHING

Written By: Stephen E. Manousos and Scott W. Tilden
Published By: Venture Perspectives Press
List Price: $19.95
Reviewed By: Woody Liswood

If you are contemplating getting involved in desktop publishing, you owe it to yourself to purchase and read this book. If you've already started doing desktop publishing, this book is full of interesting information and tidbits of technical information that can make your life as a desktop publisher easier.



Although only the chapter about working with multiple colors contains color illustrations, there are multitudes of illustrations presenting the wide variety of topics covered throughout the book. In fact, I didn't miss the use of color and, as a sometimes desktop publisher, I learned something on almost every page.

The authors use a consistent design scheme throughout the book. The descriptive text is on the outside of both the even and odd number pages. The inside column is always used for illustrations covering the adjoining text and in many cases, illustrations took up most of the page. I found this format easy to use.

Usually when I get a book like this, I read a chapter, put it down, and continue reading later. This book, however, was hard to put down. The writing is conversational, the information necessary, and I couldn't wait to see what was next. Here is an example of the writing from the chapter about Artwork and Photos:

"If you're using 35mm film, take both HORIZONTAL and VERTICAL shots of each scene. Unless you know at the photo shoot exactly where the photo will go in the layout, you'll do well to prepare yourself for a one-column vertical as well as a three-column horizontal. You can't anticipate where else you may want to use the photo in the future.

"THE REASON: You simply can't make a decent horizontal photo into a vertical one without losing people, background or proportion, even with creative cropping (fig.58). If you try it the other way—vertical to horizontal—you won't like how much white space you'll have to the left and right of the main subject."

The index is extensive, but there is no glossary of desktop publishing terms. An appendix contains a list of suppliers of the hardware and software mentioned in the

Continued

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- BASIC SYSTEM: **$1095**
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- Hard/Floppy disk controller
- 1.2MB Teac floppy drive
- 125MB fast hard drive 18(ms)
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- Enhanced keyboard
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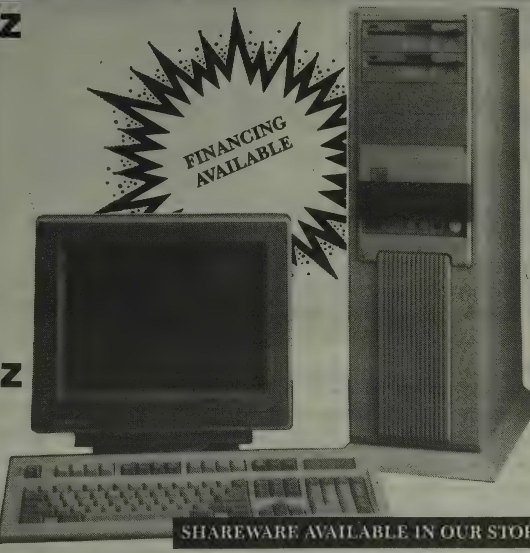

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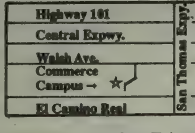

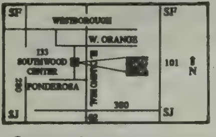

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text.

In my opinion, this one is a winner. If you enjoy publishing, or are just concerned about how your reports and other documents look, I would get this book and read it from cover to cover. (Venture Perspectives Press, 101 Madeline Dr., Suite 202, Aptos, CA 95003. 408/688-7474)

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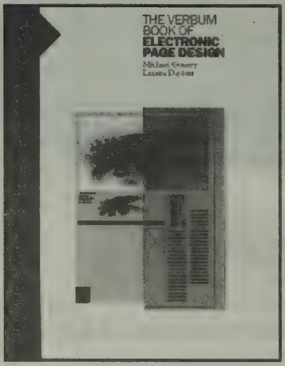
Published By: M&T Books
List Price: $29.95
Reviewed By: Woody Liswood

Just because anyone that uses a microcomputer can output text as if they were an experienced publisher, it does not follow that everyone can be a page design expert. If GIGO (Garbage In Garbage Out) really is true in programming, it is even more true when desktop publishers publish without any thought to the design elements of their publication.

Before you jump into the world of page and publication design, you should own, and read extensively, *The Verbum Book of Electronic Page Design.*



The book shows examples of work done by a variety of electronic artists and takes you through their thought process as well as the technical considerations leading to the final design. It also goes through much of the technical information about why things happen. For example, there are good examples in both color and black-and-white showing the differences between screen and halftones, what the dot patterns look like, how color is formed, why screens are sometimes tilted, and how to create or avoid moiré patterns in these areas.

The book was overwhelming when read straight through. There is a lot of information, with so many visuals, that I found it more useful to read a few pages, perhaps even a chapter, then put it aside to let the information sink in, before continuing.

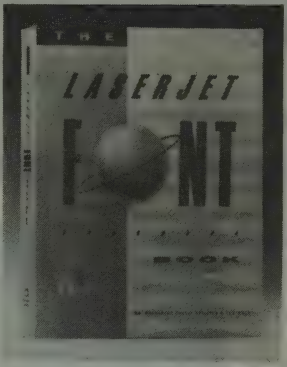
The writing style is straightforward, and the "How To" section assumes that you know the programs you are working with.

The book is well indexed, and contains an appendix with sources for the software and hardware mentioned throughout the book. I would have liked to see a glossary of all the electronic publishing terms as well. (M&T Books, 501 Galveston Dr., Redwood City, CA 94063. 415/366-3600)

THE LASERJET FONT BOOK

Written By: Katherine Shelly Pfeiffer
Published By: Peachpit Press
List Price: $24.95
Reviewed By: Woody Liswood

OK, so you've become an avid desktop publisher and you are no longer satisfied with the fonts that came with your Laser Printer. Even though you have the standard thirty-five fonts with your PostScript printer, you even feel that *everybody* uses those fonts and you need something *different.*



Should you go out and just start purchasing cartridges? Are softfonts, which load directly into the printer, better than cartridge fonts? Does anyone even care?

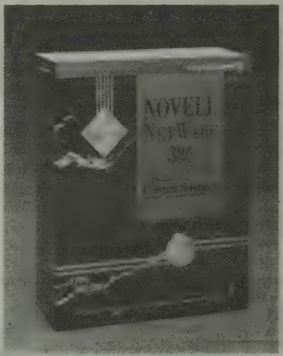
The assumption in *The LaserJet Font Book* is that you have an HP or compatible LaserJet printer with memory to hold softfonts. The author presents a multitude of font samples showing the complete upper- and lowercase alphabets available and has produced them on the 300dpi LaserJet so you can see how they would look in print.

There is an explanation of the technical aspects of fonts, from ascenders to descenders. And, there are comments about the readability of each of the fonts in different applications.

If you like fonts, or even wonder what fonts are all about, this book is for you. I doubt that you will use it as bedside reading, but when you want to know what a font looks like, who publishes it, or even where it might be used for maximum effect, this book is for you. (Peachpit Press, 2414 Sixth St., Berkeley, CA 94710. 1-800-283-9444)

NOVELL NETWARE 386: THE COMPLETE REFERENCE

Author: Tom Sheldon
Published By: Osborne/McGraw-Hill
List Price: $39.95
Reviewed By: Tom Schlegel



While office workers have become comfortable working with computers and adept in DOS and Macintosh environments, many have found their lives changed, rarely for the better, with the installation of a network. *Novell NetWare 386: The Complete Reference,* covering v3.1, can help people catch up with the technology that surrounds them.

Novell NetWare 386 provides a useful reference for users at a variety of levels of sophistication. The first one hundred pages present a good review of networking applicable to any system. The book then proceeds to a discussion of specific NetWare characteristics, installation, management, maintenance, and technical appendices.

No book can remove the reality that a network is a more complex environment than a standalone PC, but a user or network administrator can find general information as well as solutions to specific problems, such as adding a printer or managing security hierarchy.

The main criticism leveled against this book is that it accepts the assumption that a network requires the so-

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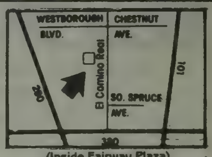

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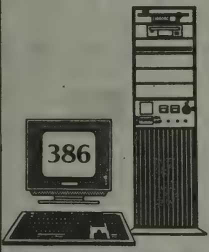

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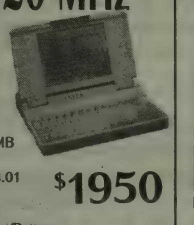

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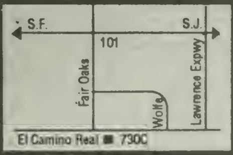

phisticated level of security that NetWare provides. Many smaller networks are handicapped by too much security. A section of the book on cleaning out security structures could make this book even more useful. Being able to remove unused or excessive security structures would help facilitate the sharing of information—the same information that motivates most network installations.

Whether user, administrator, or even installer of a NetWare LAN, the reader will find this book a concise statement on how to better utilize NetWare 386. This becomes even more clear when it is compared to the shelfful of manuals that Novell provides. (Osborne/McGraw-Hill, Inc., 2600 Tenth St., Berkeley, CA 94710. 510/548-2805)

X WINDOW SYSTEM TECHNICAL REFERENCE

Author: Steven Mikes
Published By: Addison-Wesley Publishing
List Price: $34.95
Reviewed By: Wayne Yacco

The *X Window System Technical Reference* is designed to help X Window programmers find information from many sources in a single reference. It is strictly a reference book. There's nothing in the way of a tutorial, or even an explanation, for anything.

Mikes has filled it with individual reference sections for XLIB and X Toolkit. Hundreds of XLIB details are referenced and cross-referenced in dozens of lists and tables. Everything from C functions to color maps to fonts is here.

The organization and style of the X Toolkit section is typical for the entire book. It contains intrinsic and widget functions and their prototypes. A brief description and the value returned are also listed to help the programmer recall the use of each. Other sections provide similar levels of detail on the core, widget resources, error messages, symbols, and so forth.

There are also brief reference sections for Open Look and Motif. A general reference section includes more information on clients, bitmaps, and a variety of resources.

It's a huge book (786 pp.), and there's a lot of information here for the experienced programmer. The one main weakness is the lack of an index. Also, only a rudimentary table of contents is provided. It would be easier to find the sections that you're interested in if either was provided. It's a worthwhile compendium, one I suspect you will quickly fill with post-it notes. ■

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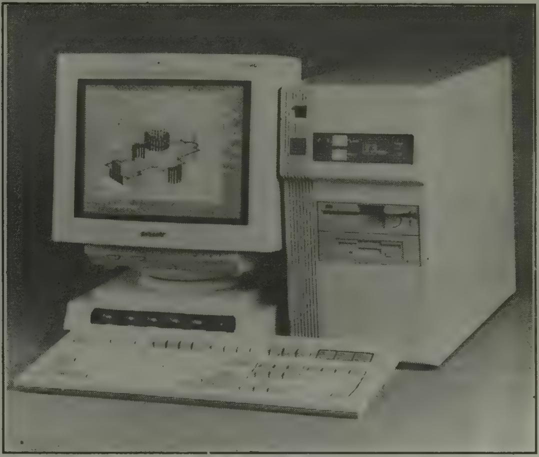

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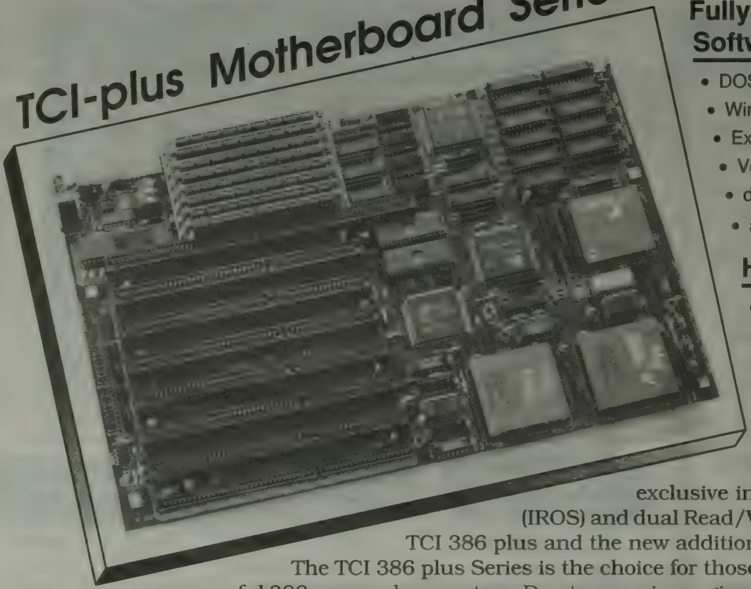

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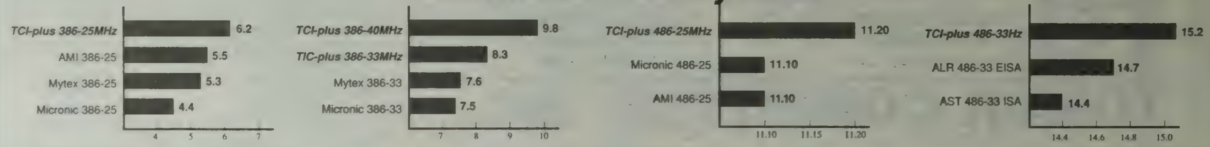

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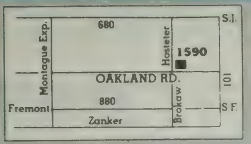

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Continued from page 30

work to keep this database up-to-date. The staff draws from annual and quarterly reports, news releases, proxy statements, and regulatory reports. They also pull from other esoteric news sources, such as prospectuses, stock exchange bulletins and lists, leading trade publications, and even newswire services.

The coverage includes some fourteen thousand publicly held US companies and more than four thousand offshore companies in one hundred countries. You'll find information here regarding topics such as earnings, merger and acquisition activity of the week, management changes, balance sheets, bankruptcy proceedings, contracts, common stock offered, and weekly changes in Moody's bond rating. Each of these topics is categorized as a Moody's "event code" found in every record.

There are more than one hundred Moody's event codes that cover all the above topics and more, including such interesting subjects as spin-off developments (very telling if the company is doing research under government contract), orders booked (Is the company ramping up for a big market push? Or is all that publicity just a hype?), and airline loading statistics (Manufacturing may be up, but are these guys really *delivering* on their promises? In other words: Can they get the product out the door?).

Both the US and international databases function the same way. More than 60% of the records include tabular data that can be imported to a spreadsheet. The compelling argument for tapping these two databases is that you can often find out what companies are doing business with whom, and where in the world they're doing it. (Or, in the jargon of the investigative reporter: "Who's in bed with whom?") Often the news reports found in these databases never make it to the major daily newspapers. And when corporate CEOs, especially those of foreign companies, don't think that "anyone is listening" they often "spill the beans" when among friends. Moody's, however, has an uncanny knack for stacking its database with just this sort of inside information.

You don't have to be an investment banker or an investigative reporter on the trail of a Pulitzer Prize-winning expose to benefit from tapping these databases. If you're just interested in double-checking the claims of your green mutual fund, or you're heading up the local grassroots opposition to the proposed construction of ACME Waste's new toxic dump site (right behind the elementary school), you'll benefit from a few hours with the "three amigos" provided by Moody's. ■

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CREATIVE TOOLS

Working With Graphic Images—Tips And Techniques

PC Users Now Face Problems Long Familiar To Their Mac Counterparts: How Do You Get That Great-Looking Multicolor/Greyscale Scan Into Your Favorite Program? How Do You Get It To Print?

BY LENNY BAILES

Each year, graphics-related computing issues become more critical for both Mac and PC users. The graphics mainstays of past years—business charts, statistical graphs, and line drawings—have been complemented by full-color slide presentations, designer graphics, and animation. On the PC side, the advent of Windows and the proliferation of inexpensive VGA hardware have reinforced interest in graphics. On the Mac side, a new wave of paint programs has been stimulated by the availability of the LC and IIsi. Support for 8-bit to 32-bit color processing is becoming common.

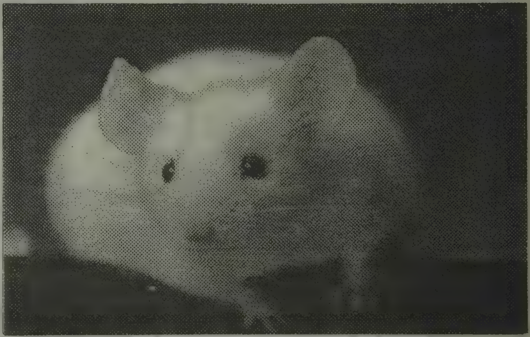
PC users now face problems that are more familiar to their Mac counterparts: How do you get that great looking multicolor/greyscale scan into your favorite program? How do you get it to print? One issue is preserving image fidelity between applications on the same platform. A second issue is cross-platform transfer of images.

IT'S A JUNGLE OUT THERE...

Now that we have versions of PageMaker, Persuasion, PowerPoint, Ventura Publisher, Adobe Illustrator, WordPerfect, and Microsoft Word on both Mac and PC, you might fantasize that things are simple. Save a document on one side, then read it in on the other.

Don't count on this with the word processors. If your documents include graphic boxes, multicolumn text, and embedded images, prepare for some disappointments. WordPerfect on the Mac is equipped to read many PC graphic formats, but images embedded in documents don't leap across platforms very well. Embedded graphics in Word for Windows don't make it to Word 4 on the Mac at all.

Ventura Publisher on the PC has no support for color TIFF and Encapsulated PostScript files. (This is to be remedied in a not-yet-available Windows upgrade.) Adobe Illustrator on the PC is a year or two behind its counterpart on the Mac. PC Illustrator can't embed TIFF images or handle 256-color EPS files. Mac PowerPoint transfers slide shows fairly smoothly to the Windows version, but you need a 68030 Mac with 4MB of memory to run the conversion utility. Going the other way, transfers from Windows to Mac PowerPoint aren't reliable. (Individual graphics in slideshows may become corrupted.) I haven't tested Aldus Persuasion yet.



WordPerfect for Mac 2.03 is equipped with a variety of graphics filters, including compuserve GIF, but WordPerfect cannot copy images to the Mac clipboard for other applications

That leaves the twin PageMaker 4 applications as the simplest way to transfer graphics embedded in documents. If you own PageMaker on both platforms, you have a fairly dependable file transfer utility. The images embedded in the documents must originate in either TIFF or Encapsulated PostScript. Both PageMakers hold these formats in common. Large TIFF and EPS files must be transferred along with the publication file.

If a Windows or Mac application fully supports clipboard cutting and pasting, images placed in PageMaker can be transferred easily. Unfortunately, some Windows and Mac applications have incomplete support for their respective clipboards. You may have to resort to importing and exporting images into various native file formats to use them.

WORKING WITH BITMAPS (WHY DOESN'T IT PRINT?)

Quite a few bulletin boards dedicated exclusively to distribution of

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Lenny Bailes is a teacher and consultant in the Bay Area. He has been writing about microcomputers since 1987. Currently he's writing a book on PC memory management and can be reached via the Internet at jroe@well.sf.ca.us, or at (415)285-6232.

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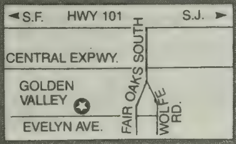
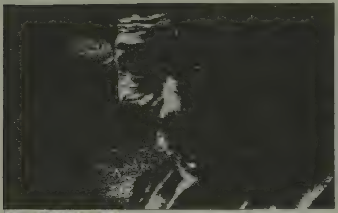
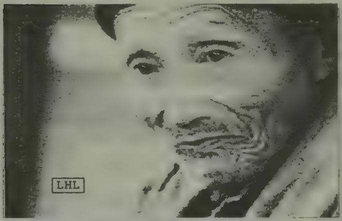


Mon-Fri: 9-6:30 Sat: 10-4 • Prices Subject to Change W/O Notice • Prices Reflect Cash Discount high-resolution graphics have sprung up in the past year. The most popular file format for these images is CompuServe GIF (Graphics Interchange Format; pronounced "jif"). GIF is a cross-platform file format. PCs, Amigas, Ataris, and Macs all have shareware enthusiasts writing GIF viewers. Shareware GIF utilities often let you resave images to other native formats on each viewing platform.

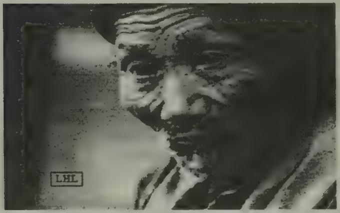

PageMaker 3: TIFF color to black-and-white

VPIC, written by Bob Montgomery, is a popular GIF utility for the PC. It has display drivers for a wide range of PC graphics cards. VPIC allows you to adjust the color balance in a picture, or turn it into a 64-shade greyscale image. VPIC reads images in .PCX, .GIF, .BMP, .LBM (.IFF), .CUT, .TGA, .SCX, .PIC, and .MAC formats. These correspond to PC Paintbrush, CompuServe GIF, Microsoft Windows, Deluxe Paint (PC/Amiga), Dr. Halo, TrueVision Targa, Color-Rix, PC Paint, and MacPaint (Macintosh) applications. The Targa filter handles images in 8- to 32-bit formats, allowing 32,000 colors to be displayed on systems with supporting hardware. VPIC also exports images to all of these formats (except for MacPaint).



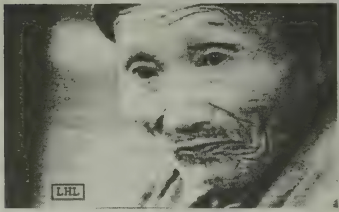
PageMaker 3: EPS forced greyscale

Paintshop and WinGif are GIF viewers for the Windows environment. Both of these shareware products allow image dithering from 256 colors to sixteen or two colors. Images may be resized, cut, and pasted into applications through the Windows clipboard. Both GIF viewers also read and write files in PC Paintbrush and Windows Bitmap (.BMP) formats.



PageMaker 4: TIFF color to greyscale

On the Macintosh, Photoshop and Photomac are two commercial programs that handle 8- to 24-bit color images. Both read and write GIF files, allowing conversion to and from the richer TrueVision Targa format. In the Mac shareware world, Vision Lab, from John Raymonds, will read images in GIF, PICT/PICT2, PixelPaint, MacPaint, and TIFF formats. (The demo version of Vision Lab has the TIFF feature disabled.) Vision Lab allows the entire image or any part of it to be saved to these formats or copied to the clipboard.



PageMaker 4: EPS forced greyscale

TIFF and Encapsulated PostScript are the most reliable forms for cross-platform file transfers (note: PageMaker 3 is erratic in its conversion of color/greyscale images to dithered black-and-white)

Multicolor scans displayed on a PC at Super-VGA resolution, or on a Mac, look great—until you try putting one into a document to print. PC and Mac applications vary in their support for multicolor image processing. Three factors enter into this: the richness of the container format for the image, the sophistication of the application's print capabilities, and the sophistication of the output printing device. We mentioned 8-bit, 24-bit, and 32-bit file formats above. The number of bits refers to the number of color values that can be assigned to each pixel of a bitmapped graphic. Black-and-white images are 1-bit (two color values), 16-color images use 4 display bits (2 to the 4th power), 256-color images use 8 bits (2 to the 8th), and 32,000-color images use 16 bits (2 to the 16th).

There is a hierarchy to the richness of the various bitmap file formats. The simplest one, MacPaint, holds only black-and-white information. Most of the others have slightly different specifications for 16- or 256-color files. PCX on the PC and PICT2 on the Mac hold 256-color images, but the information storage algorithm is not as rich as TIFF. In general, images saved in the TIFF format print better than images saved as PCX (PC) or PICT (Macintosh).

Sometimes when you attempt to place a graphic in a word processor, layout, or drawing program, the file is simply rejected out of hand, even though the application claims to support the format. The most likely cause is that the application can't handle the color level information included in the file. Since Macintosh programmers have dealt with this issue longer, a Mac program is more likely to warn you, e.g. "Cannot place 8-bit TIFF file." PC programs may refuse an image with no explanation. PCX and TIFF files aren't all alike. Each format contains a variety of different subtypes.

Alternatively, an application may accept your graphic image, but deform it by ignoring color-bit information. When you try to preview the image or print it, you may get something unrecognizable.

RULES OF THUMB

- Applications that support color at all will usually handle 16-color (4-bit) images. 256-color images can be dithered down for these programs.

- Some applications don't support color at all, but will reproduce greyscale shading.

- High-end graphics packages usually support 256-color printing and offer a series of options for exporting files to foreign formats.

You need to choose the correct options for your target application. Check the documentation for your application before you plug your scanned graphic into a file conversion utility (like Hijaak on the PC) or choose a special "save as" option in a Mac program. Unfortunately, the documentation won't always give you the information you need. Sometimes all you can do is experiment by trial and error. The following are some observations based on my own experience:

- WordPerfect 5.1 on the PC will read 256-color grey and color images, but will not reproduce them correctly when printed.
- Ventura Publisher on the PC refuses 256-color TIFF or Encapsulated PostScript files. 256-grey level images are dithered to 16- or 64-color halftones on Laserjet-compatible printers. Greyscale files are reproduced correctly on PostScript printers.
- PageMaker 4.0 on the PC accepts 256-color TIFF and EPS files, dithering them to 16–64 greys on LaserJet-compatible printers, and converting color to greyscales on PostScript printers.
- CorelDraw on the PC accepts and prints 256-color TIFF and EPS files. On LaserJet-compatible printers, the images are dithered to approximate 64 shades.
- WordPerfect 2.03 on the Mac accepts 256-color and grey level images. (File filters are provided for importing GIF files and PCX and WPG PC formats.) Images are printed accurately on a PostScript printer.
- PageMaker 4.0 on the Mac reads 256-color and grey level images in the TIFF format, printing them correctly on a PostScript printer. PageMaker accepts 256-color EPS files, as well as grey levels, but may fail to convert a color EPS file for printing on the LaserWriter. PageMaker's rendition of TIFF files is good, but Image Studio does a better job with photographic scans.
- PageMaker 3.0 on the Mac reads some 256-color TIFF files, but may render them as 2-bit black-and-white images on the printer. Some 256-color greyscale EPS files may be printed correctly.

Continued on page 207

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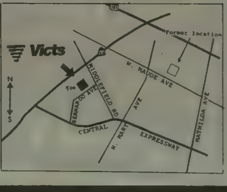

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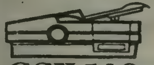

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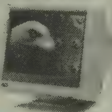

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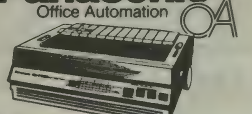

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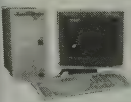

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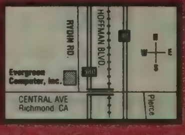

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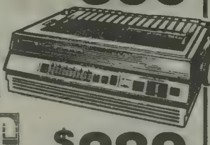

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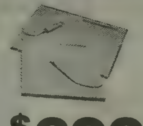

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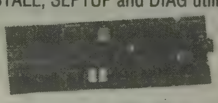

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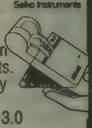

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Continued from page 202

•Aldus FreeHand 3 and Adobe Illustrator 3 read and print 256-color EPS images. FreeHand also reads and writes TIFF files, allowing them to be copied to the clipboard.

•The actual number of grey levels that appear on a PostScript printer is a function of the resolution (in dots per inch) and the scan rate (in lines per inch). (Grey levels) squared = Dots per inch divided by lines per inch.

CONVERSION UTILITIES

If you have a color or greyscale image that won't load or print from an application, conversion software can dither it down to a simpler format.

•On the PC, WordPerfect's graphic conversion utility (GRAPHCNV) can transform 256-color and greyscale images in TIFF and PCX format to 16-color or 2-color black-and-white files. This is a rough-and-ready solution to make images print well on non-PostScript printers. Hijaak (reviewed in MicroTimes #80, March '91) has more sophisticated dithering tools. Hijaak reads and writes most standard formats on PCs and Macs. The current version can also add variant TIFF flavors to the conversion menu. Although the built-in TIFF flavors for PageMaker and FreeHand force color to greyscale, I added color TIFF options for Macintosh by reading in sample images saved in Mac applications.

There are also shareware dithering-and-conversion utilities available on public bulletin board systems:

•Graphics Workshop from Alchemy MindWorks is a PC shareware package that offers a series of 256- to 16- or 256- to 2-color dithering algorithms. Graphics Workshop reads MacPaint, GEM Image, GIF, TIFF, WPG, IFF/LBM, Pictor, TrueVision Targa, Windows 3 BMP, Old Windows MSP, Encapsulated PostScript, and text files. If none of your applications can print an image in its full 256-color glory, Workshop will print screen-sized images to LaserJet-compatible or PostScript printers. The documentation included with the package contains explicit tutorial material on the optimum way to save files for each supported format.

For transferring images to or from a Macintosh, Vision Lab is an extremely useful shareware program. Unlike some of the newer, fancier Mac applications, Vision Lab can copy 256-color images to the clipboard for pasting into other programs. Vision Lab also provides a series of dithering algorithms to convert color "Pixelmap" images to black-and-white bitmaps.

WORKING WITH VECTOR GRAPHICS

On the PC, there are three or four application-dependent vector formats; on the Mac, only two (Encapsulated PostScript and PICT). Both Mac formats are switch-hitting containers. The EPS and PICT formats can be used to store either bitmap or vector information. With small variations, Encapsulated PostScript is also used on the PC.

Like bitmap formats, the various vector formats have a hierarchy of richness and fidelity. Encapsulated PostScript is the most reliable for transferring vector files between applications or platforms. If your program can handle Encapsulated PostScript and you own a PostScript printer, you should work with EPS files as much as possible. (This may not always be practical, due to hard disk storage limitations, or low-end applications that can't read EPS.)

On the Mac, if you don't use EPS, vector drawings are all written in some variant of the MacDraw PICT format. For PCs, the next most popular format after EPS is Computer Graphics Metafile (CGM). If your source graphic originates in an alternative PC format, Inset's Hijaak can convert it to EPS. Hijaak reads and writes AutoCAD DXF, LOTUS PIC, Hewlett-Packard Graphics Language (HPGL), Windows Metafiles (WMF), DRI's GEM, Computer Graphics Metafiles, and Macintosh PICT. The last option may be useful if you want to move the graphic to or from an older Mac application that doesn't handle PostScript. Version 2.02 of Hijaak now reads and writes both bitmap and vector PICT/PICT2 files. The high-end PC design programs (CorelDRAW and Micrografx Designer) also read and write most of these.

The rule of thumb for Encapsulated PostScript is that a PC- Preview EPS file will work with most PC and Mac Programs that accept PostScript files. A Macintosh Preview EPS file may not work in PC programs. If you want to move a vector graphic from the Mac to the PC, it should be saved in the Mac application with no screen preview, or as a "PC-Preview" EPS file when this option is available.

OTHER FILE TRANSFER ISSUES

Mac to PC: Disable MacBinary communication features on the Mac if the file is sent by modem.

PC to Mac: PC files usually show up on the Mac desktop as generic or PC "text" files. PageMaker, WordPerfect, Adobe Illustrator, and MacDraw Pro can place these files if they are named with an appropriate three-letter PC file extension: "Filename.tif" for TIFF files and "Filename.eps" for Encapsulated PostScript. Other Macintosh applications will not see these files as graphics unless the file type in the resource fork is changed. Either Disk Tools or ResEdit allows the file type to be edited. ■

RESOURCES:

PageMaker 4.0 for Windows (PC)
PageMaker 4.01 for Macintosh, $795
Aldus Corporation
411 First Avenue, South
Seattle, WA 98104
(206)622-5500

PowerPoint for Windows/ PowerPoint Mac
Microsoft Corporation
One Microsoft Way
Redmond, WA 98052
800-323-3577

WordPerfect 5.1 (PC)
WordPerfect for Macintosh, v2.02
WordPerfect Corporation
200 West Center Street
Orem, UT 84957
800-541-4566

Hijaak, v2.02, $249
Inset Systems
71 Commerce Drive
Brookfield, CT 06804
800-828-8088

VPIC, v4.6, $15
Shareware from Bob Montgomery
543 Via Fontana #203
Altamonte Springs, FL 32714
(Also through CompuServe or public BBS)

Paintshop, v2.02, $29 (+ $4 shipping)
Shareware from JASC, Incorporated
17743 Evener Way
Eden Prairie, MN 55346
(612)934- 7117
(Also CompuServe or public BBS)

WinGif, v1.4, $15
Shareware from SuperSet Software
P.O. Box 50476
Provo, UT 84605
(Also CompuServe or public BBS)

Graphics Workshop, $40
Shareware from Alchemy Mindworks
P.O. Box 500
Beeton, Ontario L0G 1A0, Canada
(Or public BBS)

Photoshop
Adobe Systems, Incorporated
P.O. Box 7900
Mountain View, CA 94039.
(415)961-4400

Vision Lab, v1.0D12
Shareware from John Raymonds.
Demo version available on DELPHI, CompuServe, and GEnie as well as public BBS systems.
Contact Raymonds through CompuServe: 76174,205 for full-featured version.

GLOSSARY OF TERMS

Antialiasing:
When bitmap images are edited or resized, individual lines and edges often take on a jagged appearance. Antialiasing is an algorithmic process which examines a painting and smooths out lines and edges by adding or subtracting pixels.

Aspect ratio:
In most PC graphics modes the pixels which make the display are longer than they are wide. The Macintosh uses square pixels. The ratio of length to width of pixels is called the aspect ratio.

Bitmapped image:
Drawing or picture created by turning individual pixels off and on. Bitmaps are processed by programs and printers as an array of dots.

Dither:
Shades of grey can be simulated on a 2-bit (black-and-white) display or printer by arranging groups of alternately colored pixels. The eye sees properly spaced black-and-white patterns as greys.

EPS:
Encapsulated PostScript—Adobe's high-end format for bitmap and vector files. Encapsulated PostScript files optionally contain a bitmapped screen preview image. The screen preview is not necessary to print the image to a PostScript printer.

Floyd Steinberg Dithering:
This is a popular dithering algorithm named after its inventor. Hijaak uses the term "Diffusion" for Floyd Steinberg dithering.

Greyscale:
A 4-, 8-, or 16-bit display may represent individual pixels in multiple colors or grey levels. PostScript printers reproduce the grey-level information to yield a truer representation of shaded images than possible from dithering.

Halftone:
A special form of pattern-dithering used to represent photographic images.

TIFF:
Tagged Image File Format—a specification for storing graphics files developed jointly by Aldus and Microsoft. TIFF is the richest file format commonly shared by Macs and PCs. PC TIFF files are also called "Intel format." Macintosh TIFF files are also called "Motorola format." Because these files are often huge, there are a series of compressed TIFF subtypes read by some applications. If you don't know what type your application uses, it's safest to save "uncompressed" TIFF files.

Vector image:
Drawing or picture created as a series of independent screen objects. Programs and printers process these images by dealing with an equation which describes each object.

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286-12	385

1. 80287. 80387. CPU

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256K x 9 - 8	14
SIPP	
1 Meg x 9 - 8/10	43
256K x 9 - 8/10	15
MEMORY for Apple, AST, AT&T, Compaq, Dec, Dell, Epson Everex, HP, IBM, Nec, Sun, Zenith	call

3. BOOKS

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4. CD ROM

SONY (with controller, no software)	
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CDU 7101 380ms SONY BUS ext, hf ht	635
CDU 541-01 380ms True SCSI BUS int hf	525
CDU 541-01 without controller	435
CDU 6211 380ms True SCSI BUS ext hf	685
CDU 6211 without controller	575

5. CASES

XT Case / AT Case	$30/50
Baby AT w/ 200W Power	105
Baby Tower w/ 200W Power	115
Mid Tower w/ 200W Power	135
Full Tower w/ 230W Power	165
King Tower Case w/ 375W Power	645
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2 half ht or 1 full ht, 60W	69
2 half ht or 1 full ht, 60W, 11lbs	119
3 half ht or 2 full ht, 60W, space for additional power, 13lbs	139

6. CONTROLLERS

4 Floppies w/ IDE controller for AT	$49
IDE controller for XT and 8 bit drive	35
Gen Card (XT) (2 MFM & 2 FD)	55
SCSI controller (& 4 FD) for AT	115
ADAPTEC	
2322D 1:1 ESDI	175
1542B SCSI w/ kit	299
DTC	
6280 1:1 ESDI	135
7280 1:1 MFM	70
7287 1:1 RLL	79
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Controller 1.2 & 1.44 (XT, AT)	35
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TMC 850 for XT (H only)	79/139 kit
TMC 875 for XT (F & H)	129/209 kit
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TMC 885 for AT (F & H)	139/169 DOS/259 kit
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Seiko DT3613 12"x12" 4 button & pen	289
SummaSketch II 12"x12" 4 button & pen	325

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CP-3044 40MB 25ms 3.5", 1" ht	209
CP-3104 100MB 25ms 3.5"	335
CP-30104 120MB 19ms 3.5", 1" ht	355
CP-3204F 200MB 16ms 3.5"	555
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4170-170 157MB 14ms ESDI 5.25" full	745
8380-380 360MB 15ms ESDI 5.25" full	1075
8380S-380 360MB 15ms SCSI 5.25" full	1095
8760-760 676MB 16ms ESDI 5.25" full	1555
8760S-760 676MB 16ms SCSI 5.25" full	1585
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MXT-7120A 130MB 15ms IDE 3.5"	375
LXT 213SY 200MB 15ms SCSI 3.5"	625
LXT 213A 213MB 15ms IDE 3.5"	585
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D3142 40MB 28ms MFM 3.5"	265
D5655 150MB 18ms ESDI 5.25" half ht	589
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Hardcard II XL 50 50MB, 9ms	389
Hardcard II XL 105 105MB, 9ms	575
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ST-225 20MB 65ms MFM 5.25" half ht	190
ST-251-1 40MB 28ms MFM 5.25" half ht	235
ST-157A 40MB 28ms IDE 3.5"	175
ST-1102A 89MB 19ms IDE 3.5"	285
ST-1239A 211MB 15ms IDE 3.5"	565
ST-277N 64MB 28ms SCSI 5.25" half ht	285
SYSGEN	
Easy Floppy for all AT 720K/1.44MB	90

9. EXTERNAL DRIVES

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SuperBaby w/ power & carrying case, 2.25lb 40MB 25ms / 117MB 19ms	555/785
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Portable EasyFloppy 3.5"/5.25" for laptop	235

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Mini AT I/O (S,P)	29
AT I/O w/ IDE Controller	59
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EVEREX	
Magic AT I/O (w/ NS16550AFN chipset)	49
Magic AT I/O w/ Game port	57
Second serial port	25
KOUWELL	
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MAXI 101	35
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386SX-20 Model 23V 2MB, 1.44FD, 20MB HD, DOS 3.3	2445
EVEREX	
Tempo LX 386-16SX, 1MB, VGA LCD 1.44FD, 20MB HD, DOS 4.01, 7lb	1995
Tempo LX 386-20SX 20MB HD	2045
Tempo LX 386-20SX 40MB HD	2295
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PANASONIC	
CF-370 386SX-20,1MB,1.44FD,60MBHD	2895
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Notemaster 386SX-16 1MB, 1.44FD, 20MB HD 640x480 VGA display, Win 3.0 & Lap-Link	2095
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386SX-20 1MB, 1.44FD, 40MB HD, LCD	2329
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T1000SE / T1000XE	985/1195
T1200XE - 20 / 40	1875/2125
T1600X - 20	2235
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MEMORY for laptops : Compaq, Epson Everex, Nec, Panasonic, Sharp, Texas Instrument,Toshiba, Zenith	call

13 LASER PRINTER ACC.

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Laser Printer Labels 1" x 2 5/8"	$22
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PANASONIC see Panasonic in section #21	
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Evercom 2400 Baud Internal	84
Evercom 2400 Baud Internal w/ MNP5	139
Evercom 9600 Baud Internal v.32 w/ MNP5	495
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CVB4997 14", 1024x768, .28, Int	345
CSA 7571 17", 1024x768, .31, Non-Int	895
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CM1450 14", 1024x768, .25, Non-Int	549
SONY	
1304 14", 1024x768, .25, Non-Int	579
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441 VGA 14", 800x600, .41	245
TAXAN	
UV1000 20", 1280x1024, .31, Non-Int refurbished / new	1450/1850

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VLSI	
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MICRONICS	
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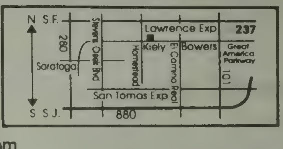

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Pacific Page P.E. (for HP IID,IIP,III,IIID, IIIP)	325
Pacific Page XL (for HP IIP,III,IIID,IIIP) comes w/ 2MB & accelerator board	715
Pacific Page P.E. & Pacific Talk for Mac & HP IID,IIP,III,IIID,IIIP	450
Pacific Page XL & Pacific Talk	845
Pacific Type	245

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Pacific Bar Code P.E. (for HP IID, IIP, III)	315
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LOGITECH

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Cordless Mouse	119
Dexxa serial mouse	27
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Trackman Serial / Bus	80/85

MICROSOFT

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Mouse Serial / Bus 400PPI	89
Mouse (400PPI) w/ Windows	157

MOUSE SYSTEMS

Omni Mouse II	29
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PC Mouse III Bus w/ Power Panel (optical)	89
PC Trackball	49
The White Mouse w/ Power Panel	56

19. NETWORK

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5 packs (5 boards 1 manual)	799
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3C505 16 bit, 256K / 5 packs	579/2620
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Lantastic AE-2 Ethernet starter kit 10Mbps, version 4.0	469
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Lantastic AE-2 Ethernet adapter 10Mbps	215
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Lantastic for Windows Network Utilities	175
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Network Eye	129

HAYES

Ethermate 8 ethernet adapter 8 bit	105

NOVELL

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NE 1000 / NE 2000 Boot PROM	32

WESTERN DIGITAL

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Netware Boot Rom	34

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230W for Tower	69
Leadman (UPS)	
330W(3 mins) (UPS)	199
550W / 1200W (UPS)	299/999
Dakota PowerSave500 (200W UPS Internal)	129

21. PRINTERS

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BP4040 2MB, 4ppm, 35 fonts	$1395

CANON

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Auto Sheet Feeder	79
Battery / Print Head Cartridge	45/22

CITIZEN

GSX 200 (9 pin)	165
GSX 130 / GSX 140 (24 pin)	249/259
Color Option for above printers	45
Auto Sheet Feeder for GSX 140	109
GSX 145 (24 pin, 132 column)	395
Color option for GSX 145	65
PN48 notebook printer, 1ppm, 2lb w/ battery & carrying case	359

EVEREX ABATON (Postscript compatible)

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DL4600 prints 5-part form, bar code mono / color	995/1129

HEWLETT PACKARD (w/ toner)

Desk Jet 500	489
Laser Jet IIP	829
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Accessories:	
Envelope Cassette(15 envelopes) for III	69
Envelope Cassette for IIP,IIIP	79
Envelope Feeder for IIID	295
HP Postscript Cartridge	495
Legal Tray for HP II & III	69
Lower Cassette (w/ letter tray) IIP,IIIP	160
Paper Tray for IIP,IIIP	69
Toner for HP II / IIP/ III/ IIIP	85/75/85/75

LASERMASTER (Printer Controller)

Series III Professional	
2MB,35 typefaces,400x400 Res	1235
4MB,135 typefaces,800x800	2490

PANASONIC

1180 / 1123	155/219
1124i / 1624 / 1695	285/355/365
32K Buffer for above printers	65
Serial interface card	75
4420 Laser	819
1MB Memory Card	169
Developer KX-PDP2	95
Drum KX-PDM2	99
Envelope Tray KX-P431	59
Fonts Card	95
Legal Tray KX-P425	45
Toner KX-P451	39
4450i Laser	1099
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Drum KX-PDM1	145
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Fonts Card	95
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Toner KX-P450	35
4455 (Postscript) same as 4450i	1975

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QMS-PS 410 4ppm, 2MB, 45 Fonts	1745
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Lower Cassette w/ Paper Tray	160
Toner	95
QMS-PS 810 8ppm, 2MB	2735
QMS-PS 2210 / 2220	call
ColorScript 100-10 4MB, 35 Fonts	6595
ColorScript 100-30i	call

SEIKO

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Labels for the printer (2 rolls/box)	11

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22. SCANNERS

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16.8 mil colors, 8 bit output gray	895
Hand scanners	see Logitech in section #18

23. SOFTWARE

ADOBE

Complete Type Library	call
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Photoshop for Mac	555
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Streamline for Windows 3.0	225
Type Align for Mac / Windows 3.0	65
Type Cartridge 1: Display Faces	215
Type Cartridge 2: Best Sellers	225
Type Manager for Mac / Windows 3.0	59
Type Set 1/2/3 for Mac / Win 3.0	75/75/105

MICROSOFT

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DOS 5.0 w/ Windows	call
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Maxx Control Yoke / Pedals (IBM)	49/39
Maxx Instrument Flight Training	66
Microsoft C 6.0	309
Microsoft C Compiler & software dev. kit	465
Mouse w/ Windows 3.0	157
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Office for Mac	515
OS/2 Presentation Manager Tool Kit 1.21	309
PC Mail Server for DOS & Windows	435
Power Point for Windows	299
Project for DOS/Windows 1.0	309/425
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Quick C Compiler w/ Quick Assembler	125
Software Development Kit 3.0	309
Source Profiler	55
Visual Basic	129
Windows 3.0	75/89
Windows 3 Device Drive Tool Kit	305
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WordPerfect 2.01 for Mac	244
WordPerfect Executive / Office	145/95

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Automap (road atlas)	55
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Object Vision for Windows	99
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Quattro Pro 3.0	295
Turbo C++ (Dos Version)	95
Turbo Debugger & Tools 2.0	105
Turbo Pascal for Windows	159
Turbo Pascal Professional 6.0	199
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Anti-virus / Backup 6.0	69/50
PC Tools 7.0 w/ Anti-virus	109
Corel Draw 2.0	349
Correct Grammer for DOS/Windows	55
Davidson Education Algebra/ Read/ SAT/ Spelling	30 & under
dBASE IV 1.1	445
Definition Plus! (American Heritage Dict.)	60
Dvorak on Typing (learning)	36
Fastback Plus 2.1 / 3.0	112/119
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Geoworks Ensemble	124
Grammatik IV for DOS / Windows	57
hDC Windows Express	55
HP New Wave 3.0	109
Hardvard Graphics 3.0	395
Individual Professor Windows	32
Individual Training for WordPerfect	42
Intermission for Win (screen saver)	35
Labels Unlimited 3.0	57
LapLink Rel 3	89
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Lotus 1-2-3 Rel 2.3 / 3.1	315/379
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Norton Commander 3.0	84
Norton Utilities 6.0	112
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PFS: First Choice (w/ Prodigy start-up kit)	79
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Qemm 386 v6.0 /Manifest /Qram	64/45/45
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CMS Chip / Speaker / MIDI kit	29/29/59
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Ventura Publisher Gold for Windows	485
XTree Gold 2.0	95

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COLORADO

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CK-17 Cable	20/9
FC-10 Controller	95
KE-09 Ext kit w/o controller	75
TC-15 controller w/ data compression	195

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EV-811 8 bit QIC-02 for XT,AT	105
EV-880 floppy tape adapter for AT	65
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25. VGA CARDS

All cards 1024x768 except as stated

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Monographic w/ Printer	32
Oak067 Super VGA 256K/512K	64/79

ATI

Wonder XL series w/ mouse, 1MB, Hi-color	245
8514 Ultra Plus 512K/1MB (VRAM)	485/625
8514 Vantage Plus 512K/1MB (DRAM)	375/399

DIAMOND

Speedstar Plus 1MB w/Sierra Hi-color chip	225

EVEREX

EGA Card	59
Viewpoint Standard (800x600)	75
Viewpoint NI 256K/512K	129/149
VRAM (1MB DRAM)	285

GENOA

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6400A 512K	169

HERCULES

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ORCHID

Prodesigner IIs 1MB,32768 colors	225

PARADISE

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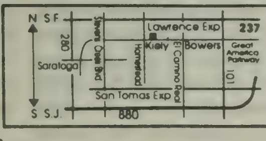

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Report From Macworld Boston

Plus: Email From Space

BY DAVID MORGENSTERN

BMUG

How do you know when a computer has really made it? For a long time the Mac was the Little Computer That Could, and PC users thought we were graphic interface eccentrics. Even though the pressure of chips on Macintosh users' shoulders is just a memory, I can still be shocked.

The other day, I thumbed through a popular mail order catalog full of "great deals." Hidden among the automatic bread machines, radar detectors, cheap jewelry, and PC clones were two Mac products, a 40MB hard disk and a floppy drive! I ran home and hid in the closet for a day. The sky did not fall down, and the world continued to spin. But the hard drive?

BEANTOWN BYTES THE MAC

It's that time of year again—time for the annual Boston Macworld Expo report.

If you sneak a peek at the World Expo calendar (sorry, no swimsuits), it's always Macworld time somewhere around the globe. There are expos in Hong Kong, New York, Paris, Milan, Stockholm, and onward, up to fifteen a year! The premier spreads, with the monster crowds, are in San Francisco, Tokyo, and Boston.

Even Boston wasn't grand enough in this recessionary year, and many companies decided to keep their booths in mothballs and stay home. The cost of a booth at these shows keeps rising. A 10 ft. square booth can cost more than $20,000. When you add shipping, setup, personnel expenses—Ouch! There were holes where booths ought to be, and some vendors had expanded their booths into this unexpected living room.

There was hope that this Expo would be filled to overflowing with sexy trailblazing System 7 savvy software that would make our mouths water and our pocketbooks open up. Unfortunately, most vendors are still trying to shake the bugs out of their upcoming products. Users who have taken the seventh step are spending all their dough on RAM, and updates for applications they already own.

Copyright © 1991 by David Morgenstern. All rights reserved worldwide. David Morgenstern is a Bay Area "MacNurturer" and BMUG member. David is DMORGENSTERN on MacNET, 72030, 1607 on CompuServe, and himself at (415)549-BMUG.

What people wanted to see, and couldn't, were the new flavors of Macintosh due out in late October, and QuickTime multimedia system software extensions. QuickTime provides a standard way for software to compress sound and pictures, and handle time-based events, so everything happens when it's supposed to. It will give us the ability to cut, paste, and use digitized movies in our documents. Desktop video cards, special videocassettes, and jumbo hard drives were pawed over by multimedia true believers. Is a word processor a *word* processor, when it can include little color motion pictures, with full digital sound, as illustrations?

LET'S MAC A DEAL!

BMUG Boston Expo veterans all commented on this year's good weather—it was almost cold! Usually the heat and humidity give hardware and attendees fits, but both the local economy and the weather were depressed. There were still plenty of goodies for the patient pilgrim:

•Hewlett-Packard showed a number of new Mac products. The "color-capable" **DeskWriter C** was a hit. The 300dpi printer uses both a plain old monochromatic black ink cartridge for everyday correspondence, and a three-color one (cyan, magenta, and yellow) when you have a colorful job. The DeskWriter C can use plain paper, but really loves a bright finished paper—they were printing on tortillas in Boston! It's only a few hundred dollars more than the old DeskWriter, so it's a real deal.

There was a lot of interest in the **ScanJet IIc**, HP's 24-bit color scanner. The unusual thing about this scanner is its calibration ability. You scan a test picture, then output the picture on whatever color device you're working with. That resulting image is then scanned back into the ScanJet IIc, which figures the difference, and makes adjustments. You can save the settings for each color device you might use—we should all be so lucky to have more than one! It has a $2000 list price, so it's not for everybody.

•Everyone tried to keep a brain-dead look off their faces throughout the lengthy and

> **Reportedly the electronic mail in space program may not have a future. Somehow the shuttle mail address leaked out, and the astronauts received eighty messages from unauthorized users. Leave it to the government to put a program in jeopardy because it was too successful.**

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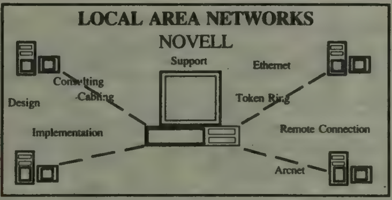

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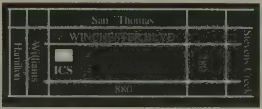

Look around!

(I certainly did), but it doesn't get any better than this, **ICS** out performs the giants with incredible prices, knowledgeable technical support and reliable personal sevice. for more than a year now my ICS 386-33 has provided spectacular performance under a rigorous workload. I can't imagine why anyone would want to take chances with our-of-area suppliers or would want to pay extra for a brand-name sticker when ICS has it all right here and at the right price. Keep it up,ICS

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- ‹ 386/sx 20 $455
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b. Regular VGA 640 x 480 .39 dp 14" Monitor & 16 bit card	$295
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1MB x 1 80 ns : $4.5

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comprehensive feature demonstrations of the newcomer spreadsheets in town, **Claris Resolve** and **Mac 1-2-3** from Lotus. But there was real excitement in the crowd seeing some wild new games for the first time.

Spectre is a wonderful tank simulation by GameWorks. You maneuver around obstacles and fight against enemy tanks on a square arena. The color modeling and sound have not slowed this game down a bit—it's very smooth. Spectre can be played by a number of users over an AppleTalk network. The performance is exceptional, even when you're blasting at a co-worker on another floor. Why bother with inter-departmental baseball leagues? Teams can kick each other's rears, and never worry about sunscreen, getting hit by a ball, or sliding into the boss.

Mutant Beach by Inline Design is an arcade game with amazing 256-color animation. When run under System 7, it also utilizes four-channel sound. The player guides a character, Native Nick, through adventures on a tropical island. There's a cast of mutant creatures, traps, and gates that must be overcome.

Casady & Greene released **Glider 4.0**, the commercial version of a popular shareware game. The user pilots a paper airplane through a sixty-room mansion, avoiding various obstacles. This version includes color, additional sounds, and a room editor.

•There were plenty of bargains for new Macintosh owners in integrated packages and software bundles. **Microsoft Works** has had sole possession of the integrated package market for years, and it's gotten pretty long in the tooth. Three other companies (Beagle Brothers, Claris, and Symantec) saw an opportunity and jumped in fighting. The competition is so strong that Microsoft's planned Fall upgrade has been pulled—it was reportedly profoundly lame. **GreatWorks** from Symantec wins the features list, with charting, communications, database, drawing, outlining, painting, spreadsheet, and word processing modules.

Software bundles are a great way to build a software library. Someone puts together a single package of various productivity products. Most of the programs are the last System 6x versions, but operate under System 7. They just don't incorporate the System 7 specific goodies. After buying the bundle, you can upgrade the pieces that you use most often.

UPCOMING EVENTS:

October 17	ProVue Panorama, Salient Disk Doubler.
October 24	Decisioneering Crystal Ball (risk assessment), Orion Systems SNA-ps (connectivity).
October 28	BMUG West at San Francisco's Exploratorium Science Museum. United Data Alice, Daystar accelerator boards.
October 31	Happy Halloween and perhaps treats from Apple.
November 7	Mobius Ethernet Display System, Claris Claris Works.
November 14	BMUG GUI-Fest '91 at UC Pauley Ballroom. 10 am–5 pm.
November 21	Radius new products, Deneba Software Canvas 3.0.

Petroglyph, the maker of Editorial Advisor, an online editorial reference, has put together a writing tools bundle for $99. The package includes eight programs including a word processor, OCR, document comparison utility, contact database, style manuals, text search utility, and personal information manager.

Users running System 6 on a 2MB Mac Plus or SE should take a hard look at some of these bundles. There's a lot of software for the dollar, especially if you're going to put off moving up to System 7 until you buy a newer model of Macintosh.

• Delta Tao was showing its painting utility, **Monet**, at the SuperMac booth. This is one of the first programs that requires the use of System 7. It lets users create impressionistic-looking color pictures based on a separate reference picture they've created, or scanned. The results are not recognizable as "computer art" and have a remarkable spontaneous quality. Monet remembers every change and "brush stroke" applied to the picture, and can replay them in order. It's an instant animation festival on your desktop.

•Chuck Colby, boss of Colby Systems, always shows the most imaginative combinations of Mac-based hardware technology. The **Colby Nav3000** is the perfect Macintosh for the gadget hound—or spy—in the family.

It's a pile of equipment that works with Colby's **ClassMate** notebook, which is based on the Mac Classic. The Nav3000 can include a superfast cellular modem, a video modem that sends still video frames every ten seconds, and a Global Positioning Satellite receiver. This device can fix your location within 50 feet anywhere in the world. This technology was used on the battlefield in Desert Storm.

The rumor floating around is that Mitch Hall, the company that puts on the US Macworld shows, is trying to downgrade the Boston show. They want to build up the New York show, since there's more exhibition space and more hotel rooms. Much will depend on the direction of the economy, and whether exhibitors can get a good deal on bulletproof dust covers.

TO BOLDLY GO WHERE NO MAC HAS EVER GONE BEFORE

One of the themes wildly promoted at the last Boston Macworld Expo was the Space Shuttle Atlantis. This was not a spontaneous reaction to the space program, although everyone I know is wild about the *Star Trek: The Next Generation* show, but an attempt to ride on the public relations mouse-tail of the Mac Portable carried onboard.

The Mac was used for a number of things. They tested different cursor control devices that will be used in future missions, perhaps on a space station. The astronauts would send and receive electronic mail using the AppleLink software and network. The computer was also used to record other medical test results and mission notes. MacSPoC (Shuttle Portable Computer) was an application that provided a real-time display of the shuttle's orbital position against a world map, along with with day and night cycles, tracking stations, and emergency re-entry information. For all the dough that the space shuttle costs, you'd think that it would come with this feature built-in. I bet it comes with a cheap AM/FM radio and no cassette deck.

The portable had to be modified a byte for the trip into orbit. For some reason it was fitted with a special fuse to prevent accidental turn-on during ascent—perhaps they didn't bring a spare set of batteries? The trackball had to be modified so that the trackball wouldn't float out of its socket in zero gravity.

Apple claimed that this was the first time ever that email had been sent or received from space. They didn't count the data files sent with XModem using a very expensive PC system, or a mail drop via ham radio. But this is *real* electronic mail!

The very first email message from space doesn't have quite the emotional resonance of Neil Armstrong's words as he hit the lunar dust. "Hello Earth ! Greetings from the STS-43 Crew. This is the first AppleLink from space. Having a __GREAT__ time, wish you were here,... send cryo, and RCS! Have a nice day...... Hasta la vista, baby,... we'll be back!" Translated into the vernacular, cryo means cryogenics fuel for life support, and air, while RCS is Reaction Control System, fuel for maneuvering and control. It's the old wire-home-for-more-cash routine!

Reportedly the electronic mail in space program may not have a future. Somehow the shuttle mail address leaked out, and the astronauts received eighty messages from unauthorized users. Leave it to the government to put a program in jeopardy because it was too successful.

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wide took a sharp nosedive in August. This was directly attributable to the release of the **More After Dark (MAD)** collection of display software for Berkeley Systems' popular screen saver, After Dark.

After Dark is not just one screen saver, but is an ever growing assortment—a candybox of fun programs. It's infinitely extendable through add-on modules. The modules are simply placed in a folder, and are instantly available for selection through its Control Panel Device.

The best of the bunch is **Lunatic Fringe**, an arcade game by Ben Haller, author of the fantastic shareware game Solarian II. You command a little space ship, fighting nasty Puffers, Hammerheads, and other beasties, while dodging meteorites. I've found it irresistible, and relentless, since it tempts me to play at the worst time—when I've stopped typing for a few moments!

There are many more amusing add-ons in the package. **GraphStat** creates random and hilarious labels for graphs thrown on the screen. You can add your boss and a few well-chosen off-color-isms into the phrase lists for some really professional results!

Berkeley Systems holds a contest every year for innovative screensavers, and some of the 1990 winners are featured in this set. For compulsive users, afraid of any hint of viral infection, there's the **Virex-D** module that scans for viruses when you're off washing your hands.

BMUG has come out with its own set of After Dark modules. The five-disk set includes forty modules of varying quality. Some of the displays are runners-up from the contest. I took a perverse liking to **Off The Air**, which simulates a television that's been left on after the station has stopped broadcasting. **TerrainMaker** draws a 3-D map of mountains and lakes. There's a disk of color pictures for the slide show module, and three disks of PICS files—flip-book style animations.

The set is available from the BMUG office for $15. ■

What Is BMUG?

BMUG is an educational, nonprofit consumer advocacy group organized to share information and provide critical direction to users and developers in the computer community worldwide.

Like any growing organization, it is many different things to its eleven thousand international members. BMUG supports many Special Interest Groups (SIGs), a Bulletin Board System (BBS), free HelpLine, software library, weekly meetings, publications, and much more. BMUG also puts out a semi-annual 400+ page book that we call our "newsletter."

Our motto continues to be: *We're in the business of giving away information.*

Come and join in the dialogue at the BMUG main meeting every Thursday evening, 6–9 pm (or whenever we finish), in the Physical Sciences Lecture Hall on the UC campus. BMUG West is a meeting held monthly in the Exploratorium, San Francisco's science museum.

The BMUG office, 2055 Center Street (a half block from the Berkeley BART Station) is open to the public 9 am to 5 pm. Please come by and say hello, meet other members, and hang out.

The BMUG HelpLine, (510) 540-1742, and our fax number, (510) 849-9026, provide technical assistance and telephonic hand-holding during business hours (11 am–5 pm). If your question can't be answered on the spot, we try to get you in touch with someone who can help. Of course, not every problem can have a happy ending—but we try.

BMUG has one of the most up-to-date, comprehensive software libraries around with 700+ double-sided disks filled with the latest versions of public domain or shareware programs and HyperCard stacks. New disks are unveiled almost every week at the Thursday general meeting. BMUG also brings you the *PD ROM™ Version II*, our library and more on CD-ROM.

Our 16-line BBS offers many of the latest versions of files in our software library as well as news, private mail, rumors, etc. The BMUG BBS is part of the worldwide EchoMac Network on FIDOnet (161/444); by calling a local FIDOnet BBS in your area, you would then be able to get in touch with us wherever you are as well as send mail to users everywhere! BMUG 's a part of the international USENET network (ucbvax!garnet!bmug) or (user.name.bmug@garnet.berkeley.edu). With our 16-line capability you now have access to BMUG almost twenty-four hours a day. It's easy to use, fun, and a great resource.

To get some further information about BMUG please write to: BMUG, 1442A Walnut Street #62, Berkeley, CA 94709. If you prefer to phone our business office call (510) 549-BMUG, or fax (510) 849-9026.

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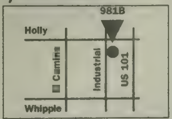

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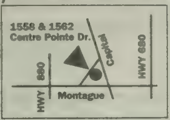

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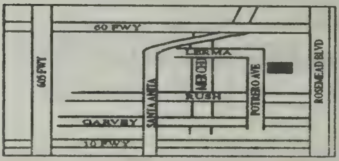

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Audio Tools

Creating And Editing Sound On The Amiga

BY MATTHEW LEEDS

I've spent a lot of time in the last few years learning about video production, multimedia production, and software development. While my personal focus has been on the visual elements, I've developed a keen appreciation of the need for audio to complement and accent the visuals. I'm not a musician, and composing music is a talent I've never had the time to attempt to develop. I still find that I need audio tools to create audio samples, edit those samples, and produce speech, sound effects, and instrument files.

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SunRize Industries is producing a series of tools for the Amiga that provides a new level of digital sound editing. Their best-selling 8-bit stereo audio sampler, Perfect Sound, attaches to the printer port and provides left and right line level inputs, as well as a microphone jack. It includes noise filters, digital gain, and a hardware-based sampling clock. It's an affordable tool, perfect for sound files that will be played back on stock Amigas.

For more ambitious projects SunRize has two higher-end sampling cards: the AD1012 and AD1016. These are 12-bit and 16-bit samplers on a card that work in the 2000/3000 family of Amigas. The 12-bit card uses the AD2105 DSP chip, and provides audio in/out, adjustable low pass filters, a SMPTE time code reader, and sampling rates up to 100KHz. The 16-bit card uses the Motorola 56001 DSP, has stereo in/out, eight times oversampling digital filters, digital I/O for DAT or CD connections, MIDI in/out, and SMPTE in. It offers the same signal-to-noise ratio of a CD-Audio player.

Both cards include the Studio 16 digital audio editing software. This lets you record directly to a hard disk synchronized to SMPTE time code and then edit the digital recording. The little brother of Studio 16 is Audition 4, an advanced 8-bit sample editor that supports the Perfect Sound sampler.

Copyright © 1991. All rights reserved. Matthew Leeds has been involved in the high-tech field since he blew up his bedroom playing with a children's chemistry kit. He has been using Commodore computers since 1982 and has a strong interest in photography, video, graphics, and related fields.

Audition 4 does all the things you'd expect from a sample editor: It offers cut, copy, paste, and delete-of-ranges in samples. It provides high, low, band, and stop pass filters. You can mix, fade, echo, invert, inverse, resample, smooth, level, and loop your samples. Audition 4 has an oscilloscope and VU meters, and also handles stereo samples and conversions to and from stereo or mono. It will automatically search for good loop points, or search through your machine's RAM for audio samples left by other applications.

The program has a clean interface that requires little support from the manual, although the manual is much better than Amiga users have come to expect of documentation. The program has some slick features that I enjoyed—real-time effects such as echo and fade that let you test out an effect before you modify the sample, not to mention a crazy mode that plays the waveform as you manually scroll it in the display (makes for some strange real-time effects). I also liked the ability to save in several modes including IFF, Sonix, RAW, compressed, and as an executable sound program. You can even record directly from your sampler to floppy. Oh yes, it will also do those great sequenced loops that sound like Max Headroom.

Audition 4 takes up about 100K of memory. It's written entirely in Assembly language, which makes it fast. It will run just fine on a 512KB Amiga, and is Kickstart v2.0 compatible. Recommended.

DAT AND MINI-DISKS

A couple of other events of interest have occurred in the audio arena. First, an agreement has been reached between leaders of consumer electronics and music industries regarding the next generation of digital electronic home recorders. Music publishers, record companies, musical artists, songwriters, and manufacturers have reached a compromise that calls for Congress to pass legislation charging royalties on digital recording equipment and blank media. This will include recordable CDs and the new mini-disk coming from Sony.

The royalty will be 3% of the wholesale price of blank media, and 2% of the wholesale price of equipment, with an $8 cap and and $1 minimum on hardware. To a significant extent, the agreement was driven by the desire to avoid the same kind of litigation the National Music Publishers Association filed against Sony to block the sale of DAT recorders in the United States. The agreement does not include current media such as analog tape, but does include DAT. It will also require that all DAT recorders contain a Serial Copy Management System (SCMS) chip that limits direct digital copies to one generation. The agreement will also make it legal to record copyrighted music at home for personal use.

The second event is Sony's announcement of a new format for audio, the mini-disk. The mini-disk is a 2.5" rewritable optical disk

Sony announced the mini-disk, a 2.5" rewritable optical disk that can hold up to seventy-four minutes of music, as well as a prototype consumer player/ recorder expected to retail at about $400 when it's introduced next year.

Amiga Mama Launches the
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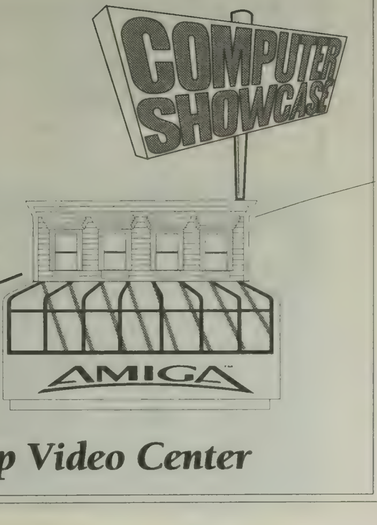

The Desktop Video Center

that can hold up to seventy-four minutes of music. Sony also previewed a prototype consumer player/recorder expected to retail at about $400 when it's introduced next year. The mini-disk system introduces several innovations to the consumer marketplace. One is a form of data compression that limits the frequency response of the mini-disk system to less than that of CD-Audio, but better than that of traditional analog audio tapes. The second is a RAM buffer for the data being read off the mini-disk. This minimizes tracking errors caused by jarring (while jogging, for instance). The buffer is large enough to hold three seconds of audio data, sufficient time for the laser pickup to regain correct tracking and resume sending data to the buffer. Since the laser pickup can send data over four times faster than the buffer needs it, this leaves sufficient time for tracking to resume with no noticeable skips.

No one, least of all Sony, is sure if consumers will take to the mini-disk. While the switchover from LP to CD is all but completed, audio tape still holds over 50% of the consumer market. Although Sony owns Columbia Records and can produce a fair number of "hit" mini-disk titles, their portfolio of artists alone will not provide sufficient software to drive the market. An interesting side issue is the fact that the mini-disk holds about 150MB of data, runs on battery power, and is a read/write medium. Imagine a 150MB read/write drive in a laptop computer with blank media available at consumer audio prices. ■

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- MAXTOR XT4170S/154MB 14ms SCSI with supper SCSI Cache(w/4MB) Controller(Avg. seek time 0.1ms, transfer 2MB/sec)
- ACTIX QUANTUM VRAM Graphics Drawing Engine W/1MB
- NEC 4Ds (1024x768 non-interlaced)
- Big tower case W/250W Power supply
- 2S,1P,1G ports
- Logitech Mouseman BUS mouse or Microsoft 400PPI BUS mouse
- Mitsumi 101 Keyboard or KeyTronic 101 Keyboard

OPTIONS:

Nano 9080i 16"0.28mm 1280x1024 non-int	+ $100
Mitsubishi HL 6605 ATK 16"0.31mm 1280x1024 non-int	- $80
Sony CPD-1304 14"0.25mm 1024x768 non-int	- $400
QUANTUM W/512K VRAM	- $65
TIGER-10V/256E-50	+ $165

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386 MICRONICS

386-33MHz SYSTEM
$980

- 64k Cache
- IMB RAM expandable to 16MB
- Teac 1.2MB or 1.44MB
- IDE Controller (2FD/2HD)
- 2 serial & 1 parallel ports
- Socket for Intel 80387 or Weitek 3167
- AT case and power supply • 101 K.B.

386-33MHz Cache System

- 64K cache
- IMB RAM expandable to 32MB on-board
- Teac 1.2MB or 1.44MB drive
- IDE controller (2FD/2HD)
- 2 serial & 1 parallel ports
- AT case with power supply
- 101 keyboard

$675

386-40MHz
$870

ECS 386-25MHz System

- IMB RAM expandable to 8MB on-board
- Teac 1.2MB or 1.44MB drive
- IDE controller 2 serial &1 parallel ports
- AT case with power supply
- 101 keyboard

ECS 386SX-20
$475
ECS 386SX-16
$415

$595

286-12MHz System

- 512K RAM up to 4MB
- 80287 socket
- 1.2MB or 1.44MB Teac
- IDE 2FD/2HD controller
- AT case with power supply
- Real time clock/calendar with battery back-up
- 101 keyboard

$295

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- MODEM/FAX (SEND & RECEIVE) 2400/9600 $89
- SIMMS 1Mx9-70NS/80NS $42/40
- SVGA MONITOR (1024x768, .28, Non-glare) W/1MB SVGA CARD $379
- BUNDLED VGA MONITOR (640x480,.39) W/VGA CARD $280
- ACTIX QUANTUM VRAM HIGH SPEED GRAPHICS DRAWING ENGINE W/1M (5 TIMES SPEED IMPROVEMENT OVER THE FASTEST SVGA) $395

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486-33 ISA W/64K CACHE	$1120
386-33 64K CACHE ACP-ASIC (W/IDE CONTROLLER & 2S,1P)	$775
386-33 64K CACHE BCP-ASIC	$710
386-25 NO CACHE BMP-ASIC	$480
M-USA	
486-33 W/256K CACHE	$945
486-25 W/256K CACHE	$795
ECS	
ECS 386-33C 32K CACHE W/CPU, C&T CHIPSET	$450
ECS 386-25 NO CACHE W/CPU	$369
ECS 386SX-20/16,C&T	$260/230
OTHERS	
386-33 64K CACHE, W/CPU C&T,UP TO 32MB ON-BOARD	$430
386-40 64K CACHE, SIS, W/CPU	$630
286-12 W/CPU	$88

MONITORS

NEC	
5D 20", 0.31, 1280X1024	$1950
4D 16", 0.28, 1024X768	$990
3D 14", 0.28, 1024X768	$585
SONY	
1304 1024X768 NON-INT,0.25	$595
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V-7 17" 1280X1024 NON-INT	$1170
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GSX140/145 (24 PIN)	$275/389
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KXP-1180(9PIN)/1123(24PIN)	$155/235
KXP-1624	$365

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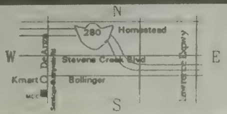

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- 120 MB 18ms Hard Drive
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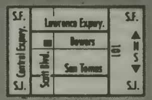

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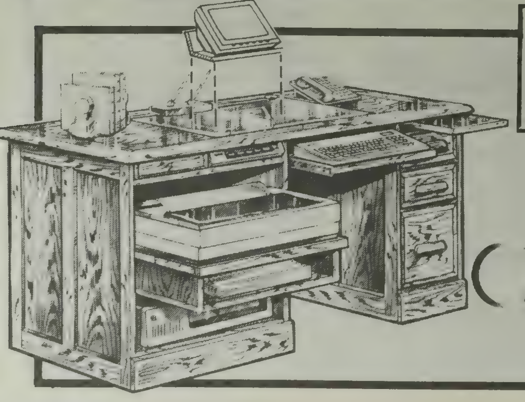

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Continued from page 44

Although not nearly as environmentally sound as Qume's program, Lexmark's return program makes a great deal of sense. Instead of sending the cartridges to landfills, Lexmark uses almost all of the material for other uses. As Americans become more aware of plastics recycling, more projects that will prevent even more plastics from going to the garbage dumps will both help reduce the amount of waste and the amount of energy it takes to haul the waste. ■

You Are Recycling Your Scrap Paper, Aren't You?

Now that most communities have recycling centers and many are picking up paper at the curb, there is even less excuse for businesses not to recycle. In most communities, there are only two types of paper recycling: newspaper and "mixed." Mixed paper is pretty much everything other than newsprint, but some communities specifically exclude magazines.

Some recycling centers have a third category, "office white," which is specifically aimed at the photocopy and computer-generated paper that so many of us go through by the ream. Office white paper garners near the highest price for all recycled paper since it takes so little processing to turn it into paper again.

If you use a great deal of paper, you should strongly consider the effects of your use and try to recycle as much as you can. If you aren't sure of how to recycle your office paper, call the local recycling center in your community. Even if your town does not have curb-side pickup, it is certainly worthwhile to stockpile used paper for a few months until you have a good load and drive it to the local recycling center.

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2 S, 2 P

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14" SVGA Monitor
16 Bit SVGA Card
Case/275 Watt PS

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Mid-T Case/230 W
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14" SVGA Monitor

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Other 33 MHz	1590
AMI 25 MHz	CALL
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Other 25 MHz	CALL

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1.2 or 1.44 FD
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1:1 Interleave

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16 Bit SVGA Card
14" SVGA Monitor

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Premium 386 C	2696
Premium 386/25	3420
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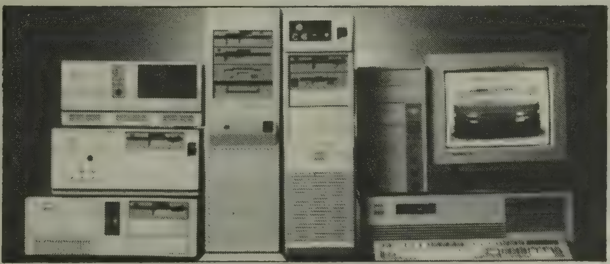

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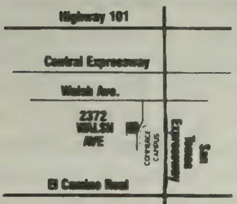

RESOURCES

Calendar Of Events

SEPTEMBER

September 27 FileMaker Pro Class. San Francisco. Informative Edge. Call: (415)392-5544.

September 28 Repair And Troubleshooting A PC Clone Workshop. Oakland. Excel Micro Solutions. Call: (510)836-2040.

September 28 DOS Workshop. San Francisco. SFPCUG. Call: (415)221-9166.

September 28–30 Ventura Publisher Conference. San Jose. VPUG. Call: (408)227-5030.

September 30 Intermediate Lotus 1-2-3 Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

September 30 Networking With Windows Class. San Francisco. PC Etcetera. Call: (415)291-8585.

September 30–October 3 AIX Expo. Santa Clara. Smith & Shows. Call: (415)964-2562.

OCTOBER

October 1 Harvard Graphics Level 1 Class. San Francisco. PC Etcetera. Call: (415)291-8585.

October 1–2 Project For Windows Class. Santa Clara. Productivity Point International. Call: (408)287-8827.

October 1–4 Seybold Publishing Conference & Expo. San Jose. Smith & Shows. Call: (415)457-5850.

October 2 Intro To Lotus Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

OCTOBER

FIFTH ANNUAL COMPUTER LEARNING MONTH

The Computer Learning Foundation has announced the release of *Computer Learning Month*, its free annual publication, and complete information on the Foundation's 1991–92 programs. This publication includes excerpts from the National Education Goals, as well as winning essays on the role of technology in restructuring the schools and strategies for teaching children positive computer ethics. For more informations, write: Computer Learning Foundation, Dept. ED91, PO Box 60007, Palo Alto, CA 94306-0007.

October 3 Automated Accounting Workshop. San Francisco. J.C. Lukrich & Co. Call: Beth Markus, (415)905-6900.

October 3–4 Novell NetWare Seminar: An Intro To Networking PC's With Novell. San Diego. Center for Advanced Professional Development. Call: (714)261-0240.

October 4 Agenda Database Class. San Francisco. PC Etcetera. Call: (415)291-8585.

October 4 Installing NetWare v2.2 For Consultants And Technicians Seminar. Oakland. Information Data Networks. Call: 1-800-348-5855.

October 4 Macintosh Networks Class. San Francisco. Abacus Training. Call: (415)759-9508.

October 4–6 AmiExpo. Oakland. AmigaWorld Magazine. Call: 1-800-32-AMIGA.

October 5 Computer Show & Sale. Santa Clara County Fairgrounds. Computer Swap. Call: 1-800-533-7220. BBS: 1-800-464-6408.

October 5 Local Area Networks Course. San Francisco. SFSU Extended Education. Call: (415)338-1373.

October 5 MacroMind MediaMaker Seminar. San Jose. Masters Institute. Call: (408)441-1800.

October 6 Computer Show. San Francisco. Fort Mason Shows. Call: (916)725-0228.

October 6–11 Sixth Annual Conference On Object-Oriented Programming Systems, Languages, And Applications. Phoenix. AACM/SIGPLAN. Call: (407)628-3602.

October 7–11 INTEROP '91: Computers And Communications Coming Together Conference. San Jose. Interop, Inc. Call: (415)941-3399.

October 8–9 InterNetworking With Novell NetWare Seminar. Palo Alto. Center for Advanced Professional Development. Call: (714)261-0240.

October 9 Intro To DOS Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

October 9 Quattro Pro Intro Class. Santa Clara. Productivity Point International. Call: (408)287-8827.

OCTOBER 8, 10, & 22

MICROSOFT WINDOWS SEMINARS

Discover firsthand how Microsoft Windows 3.0 graphical environment and the entire family of Microsoft Windows applications can improve what you do everyday by making it easier. You will also be one of the first to see the new Microsoft Excel for Windows. During October, Microsoft will present three free seminars throughout the Bay Area: October 8 in Walnut Creek, October 10 in Oakland, and October 22 in Sacramento. For more information, call: 1-800-942-1185.

October 9–11 FMS/AC: CAD Facility Mapping Course. San Francisco. SFSU Extended Education. Call: (415)338-1373.

October 9–11 Microsoft Windows For Support Engineers Seminar. Oakland. Information Data Networks. Call: 1-800-348-5855.

October 9–11 Time Line 4.0 Seminar. San Francisco. Symantec Training Group. Call: (415)898-1919.

October 10 Automating Your Business Accounting System On The Macintosh Workshop. San Francisco. J.C. Lukrich & Co. Call: Beth Markus, (415)905-6900.

October 10 Networking With Windows Class. San Francisco. PC Etcetera. Call: (415)291-8585.

October 11 PC Hardware: Problems Prevention And Troubleshooting Class. San Francisco. Productivity Point International. Call: (415)243-0100.

October 11 PickLAB IV Conference And Exhibition. Hayward. N. CA Pick Users. Call: (510)341-8661.

October 11 System 7 Class. San Francisco. Informative Edge. Call: (415)392-5544.

October 12 Computer Show & Sale. Cow Palace. Computer Swap. Call: 1-800-533-7220. BBS: 1-800-464-6408.

October 12 Hard Disk Management Techniques For Your IBM PC, XT, Or AT Class.

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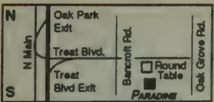
Citizen GSX 140 Plus 24pin	315
Citizen GSX 145 Wide Carriage	415



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Calendar Of Events continued

San Francisco. SFSU Extended Education. Call: (415)338-1373.

October 12 Repair And Troubleshooting A PC Clone Workshop. Oakland. Excel Micro Solutions. Call: (510)836-2040.

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October 14 Intro To WordPerfect 5.1 Class. San Francisco. SFSU Extended Education. Call: (415)338-1373.

October 14–15 FrameMaker For Macintosh Class. San Francisco. Informative Edge. Call: (415)392-5544.

October 15 Adobe Technology Conference. San Jose. Adobe. Call: 1-800-745-5189.

October 15 Advanced DOS Class. San Francisco. Abacus Training. Call: (415)759-9508.

October 15 Microsoft Excel Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

October 15 Microsoft Word For Macintosh Intro Class. Santa Clara. Productivity Point International. Call: (408)287-8827.

October 15 Real Estate Management With Platinum Series Software Seminar. San Francisco. Howard M. Haberman Associates, Inc. Call: Howard M. Haberman, (415)641-0850.

October 15–18 TAPE 1: An International Symposium On Technology, Aesthetics, Politics, Education, And Entertainment. San Rafael. Dominican College of San Rafael. Call: (415)485-3255.

October 16 Applying Quattro Pro Class. San Francisco. PC Etcetera. Call: (415)291-8585.

October 16 Word For Windows Productivity Class. Santa Clara. Productivity Point International. Call: (408)287-8827.

October 17 Accounting Systems Seminar. Oakland. David A. Simon, CPA. Call: (415)893-5753.

October 17 Corel Draw Class. San Francisco. Abacus Training. Call: (415)759-9508.

October 17 Harvard Graphics Class. Santa Clara. Productivity Point International. Call: (408)287-8827.

October 17 How To Successfully Automate Your Accounting System Seminar. San Francisco. J.C. Lukrich & Co. Call: Beth Markus, (415)905-6900.

October 18 LAN Fundamentals Class. San

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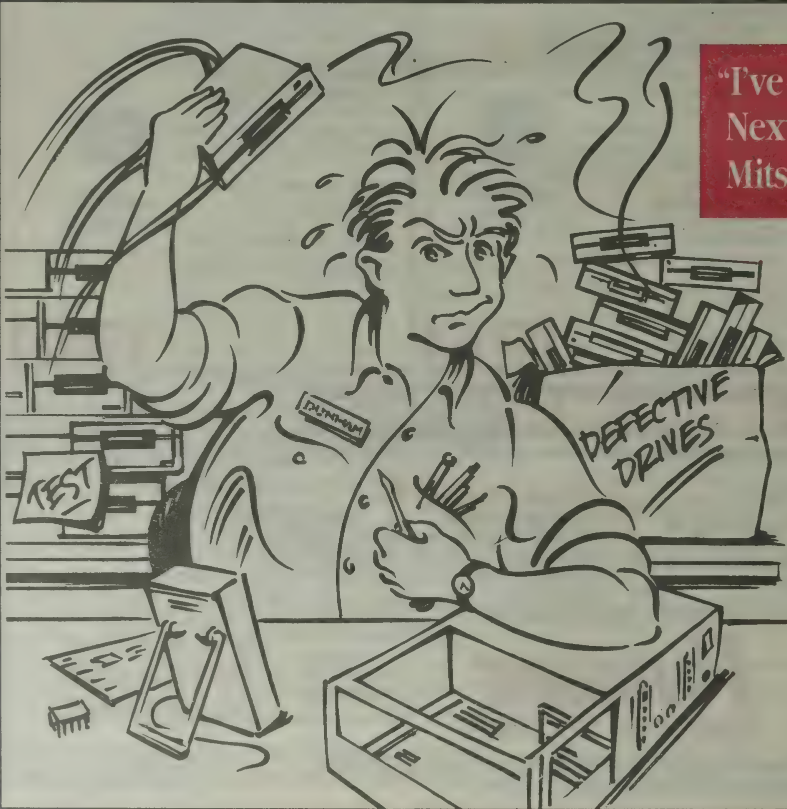

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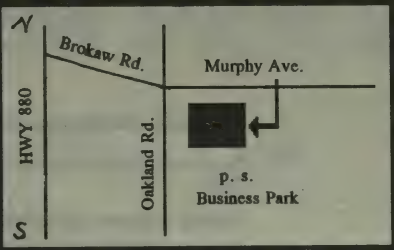

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October 18 Wireless Networking And Novell NetWare Seminar. Oakland. Information Data Networks. Call: 1-800-348-5855.

October 19 Building A PC From Scratch Workshop. Oakland. Excel Micro Solutions. Call: (510)836-2040.

October 19 Paradox Intro Class. Santa Clara. Productivity Point International. Call: (408)287-8827.

October 19 & 22 Fiber Optics: Transport Technology And Applications Course. San Francisco. SFSU Extended Education. Call: (415)338-1373.

October 21 Word For Windows Intro Class. Santa Clara. Productivity Point International. Call: (408)287-8827.

October 21–25 TRI-Ada '91 Conference. San Jose. ACM. Call: Danieli and O'Keffe Assoc., 1-800-833-7751.

October 22 Novell For The End-User Class. Santa Clara. Productivity Point International. Call: (408)287-8827.

October 22 Real Estate Management With Platinum Series Software Seminar. San Jose. Howard M. Haberman Associates, Inc. Call: Howard M. Haberman, (415)641-0850.

October 22–25 Intermediate AutoCAD Course. San Francisco. SFSU Extended Education. Call: (415)338-1373.

October 22 & 29 Internetworking Course. San Francisco. SFSU Extended Education. Call: (415)338-1373.

October 23 Intro To LANs Class. San Francisco. PC Etcetera. Call: (415)291-8585.

October 24 Automating Your Business Accounting System Seminar. San Francisco. J.C. Lukrich & Co. Call: Beth Markus, (415)905-6900.

October 24 Microsoft Excel 3.0 Level One Class. San Francisco. Abacus Training. Call: (415)759-9508.

October 24 National Conference On Criminal Justice Bulletin Board Systems. Cambridge, MA. National Consortium for Justice Information and Statistics. Call: Seth Jacobs, (916)392-2550.

October 24 WordPerfect For The Legal Profession Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

October 24–25 Aldus PageMaker For PC Class. San Francisco. Informative Edge. Call: (415)392-5544.

October 24–25 Intro To Data Communications Class. San Francisco. PC Etcetera. Call: (415)291-8585.

October 26 Repair And Troubleshooting A PC Clone Workshop. Oakland. Excel Micro Solutions. Call: (510)836-2040.

October 28 Quattro Pro Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

October 28–30 NetWare 386 Administration Class. San Francisco. Abacus Training. Call: (415)759-9508.

October 29 IBM PC And DOS Training Seminar. San Francisco. SFSU Extended Education. Call: (415)338-1373.

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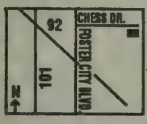

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Calendar Of Events continued

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October 31 Object Vision Level 1 Class. San Francisco. PC Etcetera. Call: (415)291-8585.

October 31 Word For Windows Desktop Publishing Class. Santa Clara. Productivity Point International. Call: (408)287-8827.

NOVEMBER

November 2 MacroMind MediaMaker Seminar. San Jose. Masters Institute. Call: (408)441-1800.

November 4–5 Aldus PageMaker For PC Class. San Francisco. Informative Edge. Call: (415)392-5544.

November 6 Excel For Windows Class. San Francisco. Informative Edge. Call: (415)392-5544.

November 6–7 Fourth Annual Microprocessor Forum. San Francisco. Call: 1-800-549-4342.

November 7 Automated Accounting On The Macintosh Seminar. San Francisco. J.C. Lukrich & Co. Call: Beth Markus, (415)905-6900.

November 9 Intro To LANs Workshop. Oakland. Excel Micro Solutions. Call: (510)836-2040.

November 10 Computer Show. San Francisco. Fort Mason Shows. Call: (916)725-0228.

November 11–13 18th Annual Computer Security Conference And National Exhibition. Miami. Computer Security Institute. Call: (415)905-2234.

November 11–13 Second Annual Multimedia Developers' Conference. San Francisco. MacroMind. Call: (415)442-0200.

November 14 Automating Your Business Accounting System Seminar. San Francisco. J.C. Lukrich & Co. Call: Beth Markus, (415)905-6900.

November 14 Real Estate Management With Platinum Series Software Seminar. San Francisco. Howard M. Haberman Associates, Inc. Call: Howard M. Haberman, (415)641-0850.

November 15–17 CyberArts International Conference. Pasadena. *Keyboard* magazine. Call: (408)446-1105.

November 18 Aldus Persuasion For PC Class. San Francisco. Informative Edge. Call: (415)392-5544.

November 18–20 Time Line 4.0 Seminar. San Francisco. Symantec Training Group. Call: (415)898-1919.

November 21 Accounting Systems Seminar. Oakland. David A. Simon, CPA. Call: (415)893-5753.

November 21–22 Q&A 4.0 Seminar: Database/Word Processing Software. San Francisco. Symantec Training Group. Call: (415)898-1919.

November 23 Building A PC From Scratch Workshop. Oakland. Excel Micro Solutions. Call: (510)836-2040.

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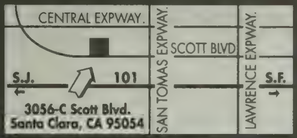

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Key Software Products BBS. (415)364-9847. 5 pm–8 am wkds, 24 hrs. wknds. 1200/2400/9600. Home of the Last Byte Memory Manager. Sysop: Dan Lewis. [Exp. #88.]

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TeleSoft BBS. (415)969-8238. Waffle/UNIX. Usenet/Internet/UUCP news and mail. Free. [Exp. #89.]

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American Association for Artificial Intelligence (AAAI). Call: Rick Skalsky, (415)328-3123. [Exp. #91.]

Association for Women in Computing. Meetings: 1st Wed., 5:30 pm, San Francisco Marriott. Call: (415)979-8450. [Exp. #89.]

The Association for Worldwide Software Support Management. Meetings: 2nd Tues., Milpitas Sheraton. Call: Mikael Blaisdell, (415)865-1323. [Exp. #90.]

Bay Area Clipper Developers Association. Meetings: 4th Mon., 7:00 pm, Fort Mason, Bldg. C. Call: Barbara Paltiel, (415)345-0152. [Exp. #92.]

Computer Professionals for Social Responsibility. Meetings: 2nd Wed., 7:30 pm, UC Berkeley, Evans Hall, room 608-7. Call: Judy Stern, (510)643-7499. [Exp. #90.]

Data Processing Management Association. Call: (415)978-0868. [Exp. #89.]

IEEE Computer Society, San Francisco Chapter. Meetings: 3rd Thurs. Call: (415)905-4400. [Exp. #92.]

Independent Computer Consultants Association, Silicon Valley Chapter. Meetings: 4th Thurs., 6:00 pm. Meetings are open to all. Call: ICCA, (408)492-8888. [Exp. #91.]

Independent Computer Consultants Association. Meetings: 2nd Wed., 6:00 pm. Meetings are open to non-members and members. Call: ICCA, (415)441-2948. [Exp. #90.]

Networkers' Toastmasters. Meetings: Every Tues., noon–1:00 pm, 2560 N. First St., San Jose. Call: Mona Kellem, (408)534-1255. [Exp. #92.]

North Bay Systems Professionals. Meetings: 3rd Wed., 6:15 pm, San Rafael. Call: Harry Chapman, (415)291-0174. [Exp. #87.]

Society for Technical Communication, Berkeley Chapter. Meetings: 2nd Wed., 6:00 pm, Yenching Restaurant, 2017 Shattuck Ave., Berkeley. Call: Rich Julius, (415)837-0397. [Exp #90.]

Society for Technical Communication, Silicon Valley Chapter. Meetings: 4th Thurs. Call: September Jenner, (408)971-2336. [Exp. #88.]

Society for Technical Communications, East Bay Chapter. Meetings: 1st Thurs. Call: Corinne Stefanick, (510)769-8931. [Exp. #88.]

Society for Technical Communications, San Francisco Chapter. Meetings: 3rd Wed. Call: (415)985-7121. [Exp. #88.]

Software Entrepreneurs' Forum. Call: Barbara Cass, (415)854-7219. [Exp. #91.]

United Sysops Association. Meetings: 2nd Wed, 7:00 pm, Coco's, 1035 S. Mary Ave., Sunnyvale. Assoc. for system operators and BBS users. Call: Bill Strouse, (408)453-3321. [Exp. #88.]

Women's Computer Society. Meetings: Last Tues. Call: Tanya Halepota, (415)949-3936. [Exp. #88.]

Writer's Online Association of Technical Communicators. Meetings: Weekly, Berkeley. Call: Cynthia Kolnick, (510)673-5819. [Exp. #88.]

USER GROUPS

ACCOUNTING SOFTWARE

Computer Associates User Group. Meetings: 1st month of quarter on 3rd Wednesdays. Holiday Inn, 1500 Van Ness. Come share ideas and information with other local users of Computer Associates Accounting Software! Call: Beth E. Markus, (415)864-6770. [Exp. #92.]

AMIGA

AAA (Amiga Addicts Anonymous). Meetings: 3rd Tues., Concord Water District Bldg., 1311 Concord Ave. Classes, BBS, pub. dom. disks, info line. Call: (415)935-0829. [Exp. #88.]

ACCESS—Amiga & Commodore Computer Enthusiasts Society. Meetings: 2nd Thurs., 7:00 pm, Livermore Airport Terminal. Call: Paul, (415)826-6053. [Exp. #88.]

ALF—Amiga Learners Forum. Meetings: 3rd Sun., 6:00 pm, Cupertino Library. Beginners group. Call: (408)262-9334. [Exp. #89.]

AUM—Amiga Users of Marin. Meetings: 3rd Wed., 7:30 pm, rm. 190, Science Center, College of Marin. Call: Bob, (415)924-5384. AUMBBS: (415)485-5895. [Exp. #91.]

AWEST Amiga Users. Meetings: 1st Wed., 7:00 pm, Computer Showcase, 2739 Geary, S.F. Call: (415)584-8406. [Exp. #91.]

FAUG—First Amiga User's Group. Meetings: 1st Tues., 7:00 pm, Palo Alto Hyatt. Call: Mike Fisher, (415)855-9426, BBS (415)595-2679. [Exp. #90.]

APL

APL Bay Area User Group. Meetings: 2nd Mon., 7:00 pm. Call: Tibor Horvath, (415)283-5611. [Exp. #90.]

APPLE

San Francisco Apple Core. Meetings: 3rd Tues., 7:00 pm, SF State University, Hensill Hall, Rm. 205. An Apple II user group. BBSes, newsletter, demos, mentoring, swaps, DTP and telecom sub groups. Call: (415)771-5830. [Exp. #88.]

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Apricot User Group, East Bay Chapter. New members welcome. Call: Ron, (415)828-9643. [Exp. #87.]

AT&T UNIX

AT&T Computer User Group-North Bay. Meetings: 1st Wed., new user education, 6:00 pm, program, 7:00 pm, San Francisco AT&T Bldg., 50 Fremont St. Call: Joe Mahoney, (415)584-6510; BBS (415)829-6027. [Exp. #90.]

AT&T Computer User Group-South Bay. Meetings: 3rd Wed., new user education, 6:00 pm, program, 7:00 pm, Sunnyvale AT&T Bldg., 1090 E. Duane Ave. Call: Joe Lipsig, (408)733-6522; BBS (408)946-7734. [Exp. #90.]

AT&T Computer Users Group, San Francisco. Meetings: 1st Wed., 7:00 pm, 50 Fremont St., 40th Fl. Call: (415)885-6631. [Exp. #91.]

AT&T Computer Users Group, Sunnyvale. Meetings: 2nd Wed., 7:00 pm. Refreshments, technical support, and informal discussions. Call: Jim Lansing, (415)885-6631. [Exp. #90.]

AT&T Computer Users Group, Sunnyvale—DOS Group. Meetings: 3rd Wed., 6:00 pm, 1090 E. Duane Ave., off Lawrence Expwy. Call: (415)885-6631. [Exp. #91.]

AT&T Computer Users Group, Sunnyvale—UNIX Group. Meetings: 4th Wed., 7:00 pm, 1090 E. Duane Ave., off Lawrence Expwy. Call: (415)885-6631. [Exp. #91.]

AT&T UNIX Computer User Group-South Bay. Meetings: 4th Wed., new user education, 6:30 pm, program, 7:00 pm, Sunnyvale AT&T Bldg., 1090 E. Duane Ave. Call: Thad Floryan, (408)985-7100; USENET, thad@cup.portal.com. [Exp. #90.]

CAD/CAM

S.F. AutoCAD User Group. Meetings: 1st Mon. Call: Mark Williamson (415)383-4060. [Exp. #89.]

COMMODORE

The Commie Party. Meetings: 175 Henry St., SF, CA 94114. Call: The Carrier Cafe BBS, (415)863-2981. [Exp. #92.]

Commodore Hayward User Group. Meetings: 2nd Sat., 2:00 pm, Palma Ceia Park. (415)793-2514. [Exp. #87.]

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Cupertino Chapter of 64/More Commodore User Group. Meetings: 3rd Sun, 6:00 pm, Cupertino Library. Call: (408)262-9334. [Exp. #92.]

CWEST Commodore 64/128. Meetings: 3rd. Wed., 7:00 pm, Fort Mason. For info: 1564 Waller #B, San Francisco, 94117. Call: (415)626-9946. BBS, (415)552-9320. [Exp. #92.]

North Valley Chapter of 64/More Commodore User Group. Meetings: 2nd Sat, 10:00 am, Milpitas Library. Call: (408)262-9334. [Exp. #92.]

dBASE

East Bay Database User Group. Meetings: 3rd Sun., 1:30 pm, 2415 Grant St., Berkeley. Call: David Chilcott, (510)653-1303. [Exp. #92.]

Silicon Valley Computer Society X-Base Language Group/dBASE SIG. Meetings: 1st Tues., 7:00 pm, Birchwood Systems, 2001 Gateway Pl., Suite 480 W., San Jose. Call: Fletcher Johnson (408)283-1333 (days & early evenings). [Exp. #90.]

Silicon Valley Computer Society X-Base Language Group/FoxPro SIG. Meetings: 2nd Thurs. 7:00 pm, Birchwood Systems, 2001 Gateway Pl., Suite 480 W., San Jose, Call: Fletcher Johnson (408)283-1333 (days & early evenings). [Exp. #90.]

DESKTOP PUBLISHING

Bay Area Desktop Publishing User Group. Meetings: 1st Tues., 7:00 pm, 2493 Telegraph Ave., Berkeley. Computer-based tutorials on PageMaker 4.0. Speaker: Dr. C.J. Wallia. Call: (510)548-7712. [Exp. #91.]

EPSON

Bay Area Epson Salts. Meetings: 2nd Tues., 7:30 pm, 2611 Broadway, Redwood City. Call: Joe, (415)364-9232, or Tom, (415)992-5475. [Exp. #88.]

FORTH

Forth Interest Group of North Bay. Meetings: 2nd Sat., 1–5 pm, 2055 Center St., Berkeley. Tutorial at noon. Call: Leonard Morgenstern, (415)376-5241. [Exp. #87.]

Forth Interest Group of San Francisco. Meetings: 1st & 3rd Tues., 6:00 pm. Walk to dinner. Call: John Peters, (415)239-5395. [Exp. #87.]

Sacramento FORTH Interest Group. Meetings: 4th Wed., 7:00 pm, SMUD, 1708 59th St., rm. A. Call: Bob Nash, (916)487-2044. [Exp. #91.]

FREEDOM, PRIVACY, AND TECHNOLOGY

BMUG SIG on Freedom, Privacy, and Technology. Meetings: Last Sun., 2:00 pm, BMUG office, 2055 Center St., Berkeley. Call: Judi Clark, (510)549-2684. [Exp. #92.]

IBM AND COMPATIBLES

EastBay FOG. Meetings: 2nd Wed. All microcomputers, MS-DOS, CP/M. Call: (415)272-9099. [Exp. #87.]

Napa Valley PC User Group. Meetings: 2nd Wed., 7:30 pm, 10 Chapel Hill Dr., Napa. Call: Lee Schwab. [Exp. #92.]

PC Clubhouse. Meetings: 1st Fri., 8:00 pm, Meiklejohn Hall, CSU Hayward. Many SIGs. CV BBS: (415)581-8529. San Leandro BBS: (415)357-9577. Call: Roberta, (415)429-1007. [Exp. #87.]

Peninsula Computer Club. Meetings: 2nd Thurs., 7:30 pm, Social Room, 222 Laurel St., San Carlos. DOS and CP/M libraries. Call: Larry Welling, (415)593-3391. BBS (415)571-9259. [Exp. #91.]

Pro Players. Club for all games and utilities users. Write: PO Box 84144, Hung Hom Bay Post Office, Hong Kong. [Exp. #92.]

San Francisco Business Computers. Meetings: 4th Thurs., 5:30 pm. For those who use computers in business. Visitors $5. Call: Jordan Rosenberg, (415)788-5338. [Exp. #91.]

KNOWLEDGE-MAN

Bay Area KnowledgeMan (and Guru) User Group. Meetings: 1st Tues, 6:30 pm., JNZ, Inc., 826 Las Trampas Rd., Lafayette. A forum for discussion and info concerning mdbs products, esp. KnowledgeMan and Guru. Call: (415)947-4878. [Exp. #89.]

MACINTOSH

SPC Apple User Group. Meetings: 2nd Wed., 7:30 pm, Fremont Main Public Library. The Society for Prevention of Cruelty to **Apple** Computers User Group supports all Apple and Macintosh computers. Call: Jim Weil, (415)796-7169. [Exp. #88.]

The International Macintosh SIG of the Stanford Macintosh User Group. Meetings: 3rd Thurs., 7:00 pm, Call: Schiko Berry, (408)826-7724, weekdays. [Exp. #90.]

Women's Macintosh User Group. Meetings: 2nd Tues., 7:00 pm, ComputerWare, Palo Alto. Call: Buffy Joseph, (415)792-2840 or Tayna Halepota, (415)949-3936. [Exp. #88.]

MULTIMEDIA

International Interactive Communications Society—IICS. Meetings: 2nd Wed., 7:30 pm, Call: IICS Hotline, (415)328-7318. [Exp. #92.]

NETWORKING

NetSIG. Meetings: 4th Tues., 7:00 pm, Novell Sunnyvale. Networking SIG for Software Developers. SEF group. Call: Skip Addison, (408)747-4356. [Exp. #87.]

NEURAL NETWORKS

Neural Networks SIG. SIG for Neural Networks and its applications. Call: Kumar, (408)946-5835. [Exp. #88.]

NEXT

BANG—Bay Area NeXT Group. Meetings: 3rd Wed., 7:00 pm, Terman Aud., Stanford. Presentations and lectures. [Exp. #87.]

NOVELL

The East Bay Novell Users Group. Call: George M. Gold, (415)444-4899. [Exp. #88.]

Sacramento NetWare User Group. Call: Charles Raley, (916)752-9561. [Exp. #89.]

Silicon Valley Novell User Group. Meetings: 3rd Wed., 6:30 pm, Coco's, 1305 S. Mary Ave., Sunnyvale. Call: Bill Strouse, (408)453-3321. BBA (408)453-3326. [Exp. #88.]

The San Francisco Novell Users Group. Call: Thomas Thibault, (415)944-9500. [Exp. #88.]

PARADOX

Bay Area Paradox User Group—BAPALS. Meetings: 4th Tues., 4:00 pm, SF State University Downtown Campus. Forum for users and developers at all levels. Call: Robert Smiley, (415)957-4656. [Exp. #87.]

PROGRAMMING LANGUAGES

Silicon Valley Computer Society C Programming SIG. Meetings: 3rd Mon., 7:00 pm, Doubletree Hotel, 5101 Great America Pkwy., Santa Clara. Discuss C related issues and occasional speakers. Call: Fletcher Johnson, (408)283-1333 (days & early evenings). [Exp. #90.]

RACES

California Races Group. Meetings: Tues., 7:00 pm, 1491 River Park Dr., Sacramento. Technical discussions on computerized emergency communications. Call: Jim West, (916)991-5505. [Exp. #87.]

R:BASE

East Bay R:Base Users Group. Meetings: 2nd Tues. Call: Longwell Assoc., (510)451-5316. [Exp. #92.]

SQL

SQL_Forum/Bay Area SQL Database Server User Group. Meetings: Once a month in downtown SF. Oracle, SQL Server, SQLBase, and more. Call: Robert Gentry, DBBS, Inc. (415)583-3000. [Exp. #90.]

UNIX/XENIX

UNIX SIG. Meetings: 2nd Tues., Oracle Corp. Fitness Center, Redwood Shores. Sponsored by Software Entrepreneurs Forum. Call: Priscilla Rowe, (415)776-0513. [Exp. #91.]

UNIX/XENIX User Group of N. CA. Write: Just Computers, PO Box 355, Cotati, CA 94931, Attn: User Group. Call: BBS, (707)792-0420. [Exp. #90.]

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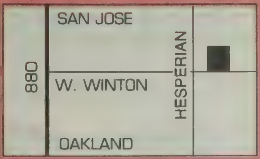

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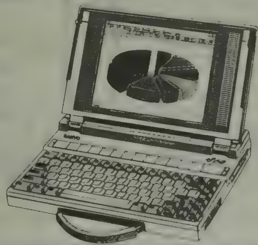

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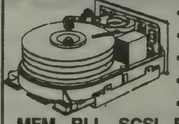

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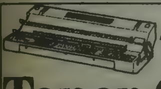

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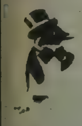

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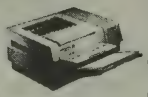

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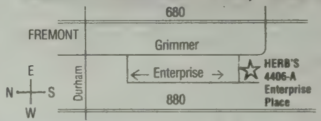

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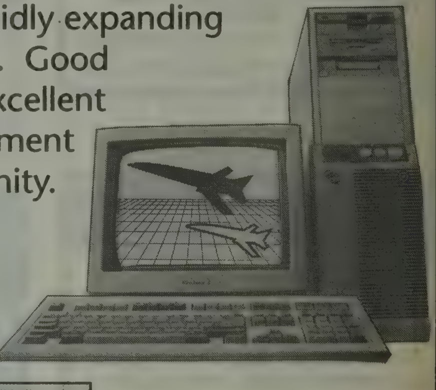

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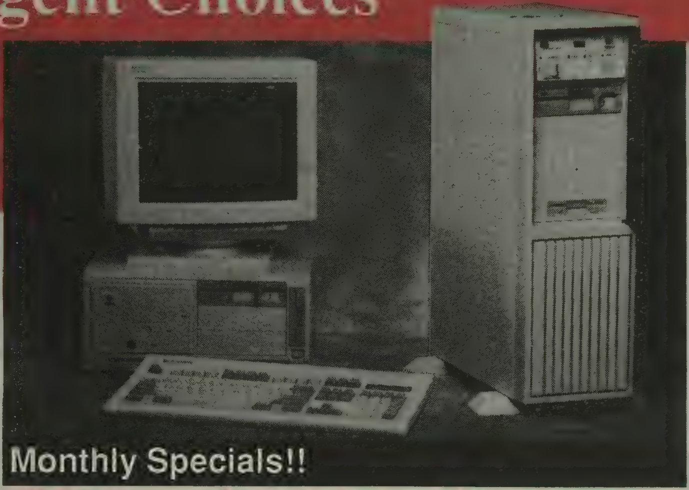

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- 1 P/2 S Ports
- Keytronics 101 Kybd (USA)
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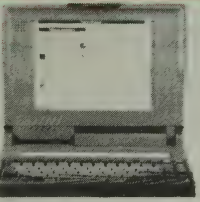

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- 16-bit VGA card
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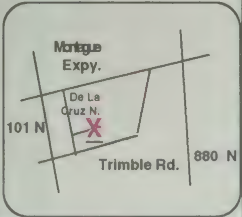

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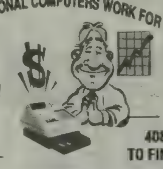

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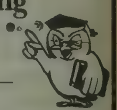

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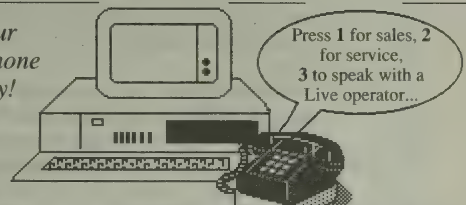
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Continued from page 80

Because I think they can take the opportunity to allow some people on the network and keep some people off. And save the best services, or the best part of the bandwidth, for themselves. Just exercise some sort of censorship judgment on that. As it stands right now, in the law, they can't do that. The phone companies don't have any right to control what traffic goes over those lines, and I think it should stay that way.

Do you see a growing dichotomy between information haves and have-nots? You keep saying none of this is cheap, and obviously it's great for those of us who can afford color Macs, but what is this doing for the kids I used to teach in Richmond?

Oh, it's not doing anything for them, and I doubt that it will for a long time. Just like so many things where technology's involved, I don't think the technology is the problem, I think technology just exacerbates a serious problem that already exists, and highlights it.

The elitist issue around technology is real disturbing to me. I don't have the answer to it. Maybe, in my utopian dreams, what'll happen is when they install fiber into the home, and they replace all the copper wire with fiber, they'll have kind of a lifeline service the same way they do now for people that can't afford the full price of the telephone, and will provide them with some basic information services online. I can only hope that that'll happen. I don't hold out much hope that it will happen, because I don't see any trends in the larger society that are trying to include people. It's quite the opposite.

But the thing that's hopeful to me is that no matter how much regulation there is and no matter how hard people try to keep certain kinds of computer technologies out of the hands of individuals—the hacker community has made it abundantly clear that they've got the tools and they don't intend to give them up. And there will be a way that the power of this technology will trickle down. I'm pretty fatalistic about a lot of this stuff, but there's always that spark of human spirit where people say, "Uh-uh. I'm going to get what I need." And they will get what they need. It would be a lot nicer if we lived in the kind of world where the people who were supposed to be governing us said, "We want you to have what you need. We want to help you get what you need." But that's just not going to happen.

In this same issue this story's running in, we've got a story on Russian computer networks, and all this social engineering these guys did to get the tools they needed.

Yeah, and that's going to continue to happen. You can count on it, because electronics are getting smaller and smaller, and more and more powerful. They're going to be harder to find and harder to detect—this stuff's just going to be ubiquitous, that's all there is to it.

Where is the interesting multimedia going on?

The interesting hardware stuff is going on in Japan. The interesting software stuff is going on in the Bay Area. What's interesting is that so many people came at this from so many different places. It's sort of like how everybody got into the PC business at the beginning—everybody came from everywhere. It's the same thing with this stuff, and that's what's exciting to me about it—I see this as being a move towards collaboration in the world, as opposed to people working in isolation.

There's so much, and not one person can do it. That's the thing I get really excited about—I see artists, creative people, getting together, and their circles are intersecting. They're working together, they're collaborating to do really neat work.

There's a lot going on in LA too, but most of the really good interactive stuff I've seen has come from here. I don't think that's necessarily going to last for long, but I think that Silicon Valley has definitely made that bloom, because there's so many people from different industries who are savvy about computers and electronics, just sort of by osmosis, I think, more than anything else.

What's going on in Japan?

Software-wise, not much. They're talking to a lot of American people about the software. But you've got Sony working on every kind of device you could possibly imagine. Things are getting miniaturized. They're finding lots of neat ways to digitize video from camcorders and get it into a form that's usable by consumers. There's lots of stuff that's going on on that level.

There's a lot of good miniaturization work going on over there, and a lot of compression work. They're working on all the technical problems that need to be solved, and we're working here more on the philosophical and software problems.

One of the issues that came up at Digital World is that in a world where everything can be digitized and infinitely reproduced, we're going to see a big shakeup in the way we think about intellectual property. What do you think is going to happen there?

Well, we're going to have to figure out a way to protect it, because if we don't, people aren't going to license it. Some people have licensed content now, but man, those people are really nervous about this. And they should be.

But there's the whole information-wants-to-be-free crowd that's opposed to intellectual property in the first place and thinks that you can't own anything that's physically infinitely reproducible.

Well, information does want to be free. That's okay. I have a tendency to believe that. Except that I really get surly with people who make Xeroxes of my newsletter. I mean, everybody wants information to be free until it's their information.

Until they put all the work into generating it.

Right. Except for people like [the Free Software Foundation's] Richard Stallman, God bless him. You know, I wish I had that guy's altruism but I just don't. There aren't very many people in the universe who do. And so considering the amount of money that gets invested in making a movie, in producing a record, all that stuff, somebody's going to have to come up with a way to protect intellectual property.

I think this question is really interesting, because I think this is going to be the first broad commercial use of cryptography. I've talked to the RSA people [RSA Data Security in Redwood City, which licenses the RSA public-key encryption algorithm] to spin out some of the scenarios. The people [RSA president] Jim Bidzos talks to about doing this stuff on a broad commercial level don't want anybody to know about it. He says that he has some pretty strong indications that people are going to come up with some creative ways to encrypt movies, encrypt digital audio, encrypt multimedia programs, so that a) they can't be reproduced, and b) they can't be altered.

Which is the other thing people are worried about.

Especially artists. Bill Gates's new company, Interactive Home Systems, they're negotiating with museums for rights to digitize high art. Some of the most treasured images of our time. This is a big issue for photographers and artists.

Let's colorize Ansel Adams...

Let's colorize Ansel Adams. Let's make three moons in the sky. Look at Photoshop—you can do anything you want. If people are going to be serious about this world, we're going to have to accept some limitations about it. There probably will be one price to license something that can be encrypted, and it probably will be a lot cheaper than the price if somebody wants to be able to screw around with it and alter it. There's going to be a whole different structure, it's going to be very interesting.

This is a very real problem. And the rest of it—there's going to be a lot of case law about this stuff. There's going to be a lot of people filing suits. (For information on *Digital Media*, contact Seybold Publications Inc., 215/565-2480.) ■

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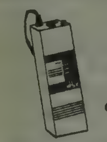

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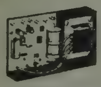

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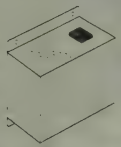

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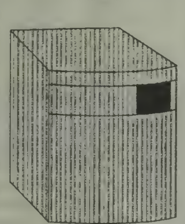

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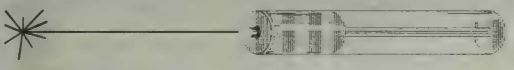

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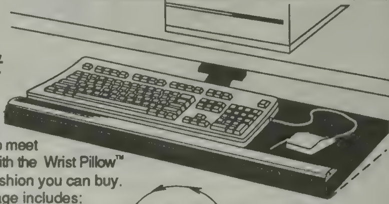

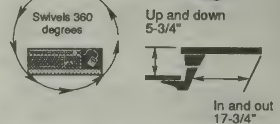

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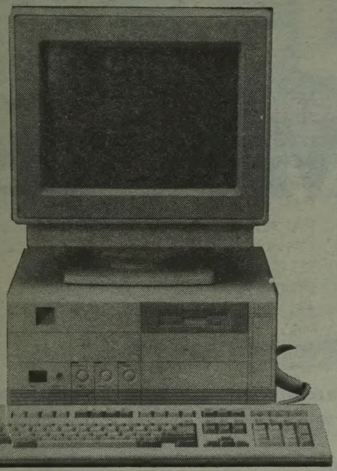

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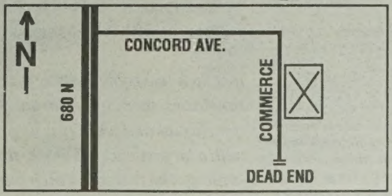

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The Great Merger

An Original Play In One Act

BY JOHN C. DVORAK

People are always asking me to write some fiction about the industry. So I began working on a play where the characters were famous industry luminaries. It's a comedy called *The Great Merger.* Here's an excerpt.

ACT I

Scene: the grand opening of the 50,000-square-ft. Bill Gates mansion on Lake Washington near Seattle. We're in a large, well-lit ballroom with video projectors beaming reruns of Leave It to Beaver *on screens around the room. A large group surrounds Bill Gates. Steve Jobs enters stage left followed by a wimpy security guard.*

GUARD: (walking fast behind Jobs) I'm telling you that you can't get in without an invitation.
JOBS: Hey, I know what I'm doing, dorkface. I lost my invitation or I didn't get one by some accident. Let's ask good old Bill.

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GUARD: Sir, the instructions are explicit.
JOBS: (turns, stands rigid, and salutes) Corporal, you're dismissed!

The guard hesitates and then salutes back. He stands there confused as Jobs races up to Gates. Gates sees him coming.

GATES: What the hell are you doing here?
JOBS: I was about to ask you the same thing. Shake! (Jobs extends his hand.)

Gates grabs Jobs's hand to discover he was concealing a joy buzzer. Gates shakes all over like he was being electrocuted.

JOBS: Hahaha. You always did fall for that one. Look! Your shoe is untied!!

Gates looks down and Jobs flicks him in the nose.

JOBS: Hahahaha. (looks at a stranger) What a rube. The guy never learns. The funny thing is that he wears loafers. Hahahaha. Watch what happens when I put the "kick me" sign on his buttocks. He'll go for months with it hanging there. Hahahaha.

Just then two goofy-looking nerds standing next to Gates each put on sunglasses, then simultaneously reach into the breast pockets of their trenchcoats and withdraw large .45 automatic pistols, each equipped with a large silencer. Jobs sees this, looks into the audience and shrugs smiling. The two goons each pump a dozen rounds into Steve, who is spun around, but stays on his feet as his clothes and body are blown to smithereens. Holding his chest he staggers offstage. Just before he disappears he holds a finger up.

JOBS: Does this mean lunch is off? Agh.

The sound of a collapse into a garbage can is heard offstage. Philippe Kahn comes running in.

GATES: NeXT!
KAHN: What happened to Steve? He looks tired.
GATES: Dead tired. Hahahahaha!

The crowd all laughs when Gates laughs.

KAHN: No matter, he'll heal, it's a family show.

Just then John Sculley comes bounding through the set on a pogo stick. He circles Gates and then bounces offstage. John Akers, CEO of IBM, comes running onstage just after Sculley bounces off.

AKERS: Holy Mackerel!! Did you see that? That could be me on that pogo stick! Have you ever seen anything like that?
GATES: No, usually he's on a skateboard. (sound of rimshot) And what the heck are you doing here? You weren't invited either.
AKERS: Isn't this the Seattle train station?
GATES: No, it's my home. What are you doing looking for a train station anyway? Do IBMers take trains?
KAHN: Yeah, since when did you stop using Greyhound? (rimshot)

Everyone laughs. Akers leaves after giving Gates and Kahn an Italian hex sign.

GATES: I thought he'd never leave. So Philippe, you know why we're here, right?
KAHN: Yes, to merge Microsoft and Borland. We'll rule the world. Nothing can stop us. We have code for everything and we've got that J.D. Power award for customer satisfaction and Ashton-Tate.
GATES: Yes, you got lucky with that one. What will we call the new company? Microsoft-land? Micro-Bore? Bore-soft? No matter, I have the paperwork ready to sign.
KAHN: Ah, good. (signs)

Just then the goons come over with guns and grab Kahn.

KAHN: What's the meaning of this?
GATES: You've been duped. I now own everything. Take him away!
KAHN: Wait, you should know something...I'm actually (rips mask off face to reveal that he's actually Jim Manzi) JIM MANZI! It's YOU who have been tricked. Philippe and the FBI have been watching this on closed circuit TV!
GATES: Drat. Foiled again. But you'll never take me alive! (A trap door opens and Gates is flung into a void below).

Epilogue: Ok, the story needs a little work! ■

© 1991 by John C. Dvorak. All rights reserved. John C. Dvorak graduated from the University of California. He is a contributing editor of PC Magazine *and* MacUser, *and is considered by many to epitomize the contrarian view of things—a charge that he vehemently denies. Dvorak's motto is: If you have nothing nice to say, then don't say anything at all.*

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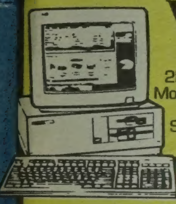

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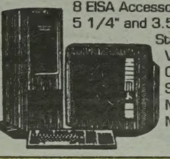

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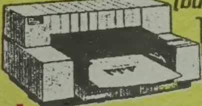

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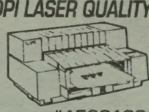

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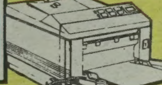

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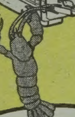

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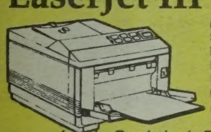

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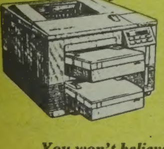

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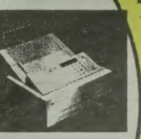

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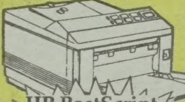

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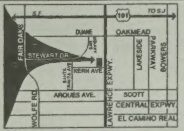
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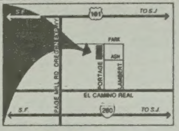
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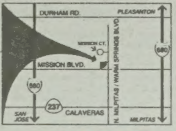
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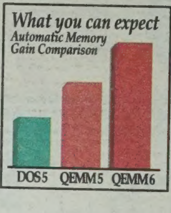
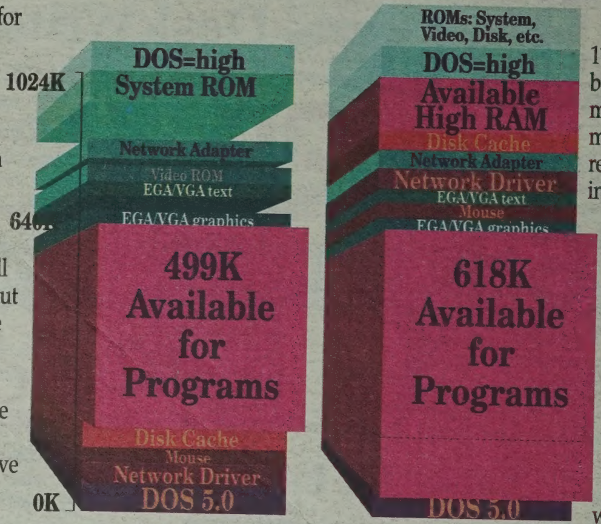
What's new is that we increased the amount of memory it frees up and improved its performance. Our exclusive 'optimize' feature automatically seeks out TSRs and device drivers and moves them out of your PC's conventional memory and into high memory. All you have to do is type 'optimize'.

QEMM-386 v6 finds more memory for your programs than any other memory manager. Period.

And only QEMM monitors your memory—checking to be sure TSRs and utilities can be moved safely before it does so.




1024K
640K
0K
DOS=high
System ROM
Network Adapter
Video ROM
EGA/VGA text
EGA/VGA graphics
499K Available for Programs
Disk Cache
Mouse
Network Driver
DOS 5.0
ROMs: System, Video, Disk, etc.
DOS=high
Available High RAM
Disk Cache
Network Adapter
Network Driver
EGA/VGA text
Mouse
EGA/VGA graphics
618K Available for Programs
DOS 5.0

Our example PC with DOS 5.0 allows 499K for conventional programs. After running QEMM, there's 618K!

Who'd have thought there'd be another 115K in your PC?

Our breakthrough 'Stealth' technology results in a gain of up to 115K of high memory on many PCs by taking advantage of the way memory is organized in most Compaq, IBM® and 100% compatible PCs to 'map' ROM into other areas of memory. Only our memory wizards fully understand the technology behind it, but every user can appreciate the huge increase in available memory.

Of course, not every PC has an extra 115K of high memory, but every PC can benefit from 'Squeeze'—our new feature to manage those TSRs that need more memory at start up and less when they're resident. Memory allocation is temporarily increased, then squeezed down when it's no longer needed.

QEMM automatically uses idle VidRAM to produce a further 96K gain on EGA and VGA-equipped systems when running character-based programs.

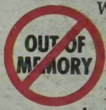
See how your PC works with Manifest.

A priceless $60 bonus.

QEMM comes with Manifest, the award-winning analysis program that makes it easy to see what's going on in your PC.

QEMM benefits users of older DOS versions, too.

Whether your computer is a PS/2™ 50 with DOS 3.3, a 486 with 5.0, or something in between, QEMM offers improved performance.


OUT OF MEMORY

That means you may not need a faster cpu. You may not need more RAM. QEMM makes your favorite programs work better by allowing them more memory to run in.

QEMM helps you get the most out of the software you own today.

Quarterdeck

Quarterdeck Office Systems, 150 Pico Boulevard, Santa Monica, CA 90405 (213) 392-9851 Fax (213) 399-3802
For orders only, call toll-free (800) 354-3222 7AM-5PM PST.

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